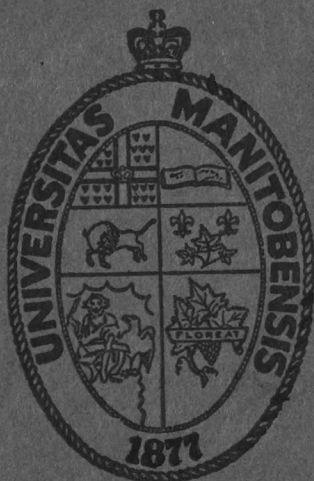


Vera Poulter

"Veritas" Oct 24

UNIVERSITY *of* MANITOBA

WINNIPEG



Arts and Science Calendar
Including Pharmacy

Session 1921-22



825-
JA

CALENDAR

University of Manitoba

WINNIPEG

*Incorporated by Act of the Manitoba
Legislature, 1877*

*Definitely Reorganized as a Provincial
University, 1917*

ARTS AND SCIENCE
INCLUDING ALSO PHARMACY
1921-1922

WINNIPEG

Printed for the University by Saults & Pollard Limited
1921

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In the numbering of Courses of Instruction throughout this Calendar except where it is otherwise explicitly stated in a footnote, the assignment of an odd number indicates that the course is given during the first term of the annual session; that of an even number that it is given during the second term; the assignment of a double number, odd and even, that it is given throughout both terms of the session.

ALMANAC, 1921-1922

1921—AUGUST

- 18—Thur. Last day for receiving applications for the September Examinations.

SEPTEMBER

- 1—Thur. Applications for admission from new students with their credentials should be filed with their respective Deans by this date.
 1—Thur. Supplemental and Matriculation Examinations begin.
 6—Tues. Finance Committee meets. Board of Studies meets. Surveying School begins.
 8—Thur. First Meeting of Engineering Faculty.
 9—Fri. First Meeting of Arts and Science Faculty.
 9—Fri. First Meeting of Medical Faculty.
 13—Tues. Registration. Opening day of First Term in Arts, Science, Pharmacy, Engineering, Architecture and Medicine. Board of Studies meets.
 14—Wed. University Lectures begin in above faculties.
 15—Thur. University Council meets.
 16—Fri. Imposition of extra fee for late registration begins for students of above faculties.
 20—Tues. Registration of Students in Medicine closes.

OCTOBER

- 3—Mon. Registration closes in Arts, Science, Pharmacy, Engineering and Architecture. Last day for payment of fees.*
 4—Tues. Board of Studies meets.
 7—Fri. University Field Day.
 11—Tues. Finance Committee meets.
 18—Tues. Board of Studies meets.

NOVEMBER

- 1—Tues. Board of Studies meets.
 8—Tues. Finance Committee meets.
 14—Mon. Payment of first moiety of Scholarships.
 15—Tues. Board of Studies meets.
 17—Thur. University Council meets.
 21—Fri. Manitoba Government Civil Service Examinations begin.
 23—Wed. Last day for receiving applications for December Supplemental and Special Examinations in Arts, Science, Medicine, Engineering, Architecture and Pharmacy.

DECEMBER

- 6—Tues. Finance Committee meets. Board of Studies meets.
 9—Fri. Lectures close for students writing December Examinations.
 12—Mon. December Examinations begin.
 13—Tues. Board of Studies meets.
 23—Fri. First Term ends.
 24—Sat. Christmas Vacation begins.

1922—JANUARY

- 3—Tues. Opening day of Second Term. University Lectures resumed. Board of Studies meets.
 9—Mon. Dental License Examinations begin. Last date for payment of second term fees and degree fees for graduating students.*

*See page 93.

JANUARY—Continued

- 10—Tues. Finance Committee meets.
- 12—Thur. University Council meets.
- 17—Tues. Board of Studies meets.

FEBRUARY

- 7—Tues. Board of Studies meets.
- 13—Mon. Payment of second moiety of scholarships.
- 14—Tues. Finance Committee meets.
- 21—Tues. Board of Studies meets.

MARCH

- 6—Mon. Examinations in Architecture for Manitoba Association of Architects begin.
- 7—Tues. Board of Studies meets.
- 14—Tues. Finance Committee meets.
- 9—Thur. Most Rev. R. Machray, D.D., LL.D., Archbishop of Rupert's Land, first Chancellor of the University, died, 1904.
- 21—Tues. Board of Studies meets.
- 23—Thur. University Council meets.
- 27—Mon. Last day for receiving applications for April Supplemental and Special Examinations in Arts, Science, Medicine, Engineering, Architecture and Pharmacy.

APRIL

- 4—Tues. Board of Studies meets.
- 11—Tues. Finance Committee meets.
- 13—Thur. University Lectures close.
- 14—Fri. Good Friday.
- 17—Mon. First Term Supplemental Examinations in Arts, Science, Medicine, Engineering, Architecture and Pharmacy begin.
- 18—Tues. Board of Studies meets.
- 24—Mon. Regular April Examinations in Arts, Science, Medicine, Engineering, Architecture and Pharmacy begin.
- N.B.—The practical Examinations in Arts, Science, Medicine, Engineering and Pharmacy will be held in April, prior to the opening of the written Examinations. The dates of the Examinations in Agriculture and Home Economics will be fixed by Manitoba Agricultural College and those of the Examinations in Law by Manitoba Law School.
- April Examinations in Accountancy begin.

MAY

- 2—Tues. Board of Studies meets.
- 9—Tues. Finance Committee meets.
- 19—Fri. Conferring of degrees. Statutory Meeting of Convocation.
- 22—Mon. Manitoba Government Civil Service Examinations begin.

JUNE

- 6—Tues. Finance Committee meets.
- Board of Studies meets.
- 12—Mon. Dental License Examination begins.
- 13—Tues. Nurses' Registration Examination begins.
- 15—Thur. University Council meets.

THE UNIVERSITY OF MANITOBA

HISTORICAL SKETCH

The University of Manitoba was established by Act of the Manitoba Legislature, in 1877, "for the purpose (as the preamble states) of raising the standard of higher education in the Province and of enabling all denominations and classes to obtain academic degrees." The government of the University was vested in a Chancellor, a Vice-Chancellor and a University Council, with powers as a "body politic and corporate" to receive, hold and sell property, to arrange courses of study, to hold examinations and to grant degrees. The Act provided for the affiliation of Colleges and for the granting of degrees in Divinity by those Colleges to students who should have obtained recognized academic standing in Arts subjects. The Chancellor was to be appointed by the Lieutenant-Governor-in-Council, and the University Council was to consist of seven representatives from each of the affiliated Colleges, three from Convocation and two from the Board of Education of the Province.

The three Colleges already in existence in Manitoba were affiliated with the University at its inception. St. John's, the Anglican institution, had been reorganized in 1866 by Bishop (afterwards Archbishop) Machray, who became in 1877 the first Chancellor of the University. St. Boniface had grown from a mission school early in the century to be the chief Roman Catholic College of the West. Manitoba College, in connection with the Presbyterian Church, had been organized in 1871. The Vice-Chancellor of the new University was the Hon. Joseph Royal; the Bursar was Mr. Duncan Macarthur; and the Registrar Mr. E. W. Jarvis.

Since 1877 four Colleges have been received into affiliation with the University. The Manitoba Medical College was affiliated in 1882, Wesley College was affiliated in 1888, the Manitoba College of Pharmacy in 1902, and the Manitoba Agricultural College in 1907.

In 1885 an agreement between the Dominion Government and the Province of Manitoba provided for an endowment not exceeding 150,000 acres of land for the University of Manitoba "for its maintenance as a University capable of giving proper training in the higher branches of education."

In 1900 an amendment to the University Act gave the University "power to give instruction and teaching in the several faculties and different branches of knowledge as may from time to time be directed by the Council of the University." The present site was granted by the Dominion Government, and the corner-stone was laid in 1900 by the King, then Duke of Cornwall and York. Four new chairs in the Natural and Physical Sciences were founded in 1904, and as well one in Mathematics and one in the combined subjects of Histology, Pathology and Bacteriology. The number of Science chairs was subsequently increased to six, Geology and Mineralogy, which at the first was combined in part with Botany and in part with Physics, being given independent status, and as well Zoology, which at first was attached to Physiology. A department of Civil Engineering was organized in 1907, and departments of Electrical Engineering, Political Economy, English and History in 1909. Departments of Architecture, of French and of German were created in 1913, and began their work in the fall of that year. In the fall of 1914 the following new departments were instituted:—A department of Pharmacy, which took over the teaching in

this subject formerly done by the Manitoba College of Pharmacy; a department of Mechanical Engineering; a department of Classics. In addition, the work of the departments of English, French, German, History and Political Economy, which had hitherto been confined to the subjects of the Third and Fourth Years in Arts, was extended to include those of the First and Second Years and the department of Mathematics, which had hitherto covered only the Second, Third and Fourth Years, assumed responsibility for the work of the First Year as well. The University thus came into the position of offering for the first time through its own faculty the full work of the course in Arts for the B.A. degree.

The affiliation of Manitoba Agricultural College with the University was terminated by an Act of the Provincial Legislature in 1912 but restored again in 1916.

The first President of the University, Dr. James A. MacLean, assumed office on January 1st, 1913.

By the University Amendment Act, 1917, there has been introduced into the corporation a Board of Governors of nine members, appointed by the Lieutenant-Governor-in-Council for a period of three years, three retiring each year, and in this Board is vested "the government, conduct, management and control of the University," including its lands, investments, appointments, limits of instruction, etc. The Council of the University has been continued, but with a reduction in the number of its members from seventy-two to twenty-eight and a limitation of the sphere of its activity to that of "general charge of the academic work of the University," within which range it is still subject to the plenary power vested in the Board of Governors. Its representative character is maintained as is shown by the following composition: The Chancellor, the President, four representatives from the faculty of the University, two representatives from Manitoba Agricultural College, one representative from Manitoba Medical College, one representative from the College of Physicians and Surgeons of Manitoba, six members to be appointed by the Lieutenant-Governor-in-Council, four representatives to be elected by Convocation and two representatives from each of the affiliated Arts Colleges, St. Boniface, St. John's, Manitoba and Wesley. Definite legislative recognition is given to the practice of the submission annually to the Lieutenant-Governor-in-Council through the Minister of Education of a budget of "anticipated revenues and proposed expenditures" and of the appropriation by the Legislature of money for University expenditures.

During the session 1919-1920, an agreement was reached with the Faculty of Manitoba Medical College whereby that institution passes out of existence upon the assumption by the University of responsibility for the maintenance of medical teaching in an adequate manner. In pursuance of this arrangement a full Medical Faculty has been appointed and a faculty organization completed.

Provision has also been made for the teaching by the University of philosophy, including metaphysics, ethics and psychology, and a chair of Philosophy and Psychology has been established.

COLLEGES AFFILIATED WITH THE UNIVERSITY

St. Boniface College, St. Boniface, in connection with the Roman Catholic Church. *Rector*—Rev. H. Bourque, S.J., St. Boniface College.

St. John's College, Winnipeg, in connection with the Church of England. *Deputy Warden*—Very Rev. Dean Coombes, "The Deanery," McCallum Place.

Manitoba College, Winnipeg, in connection with the Presbyterian Church in Canada. *Principal*—Rev. John McKay, M.A., D.D., Manitoba College.

Wesley College, Winnipeg, in connection with the Methodist Church in Canada. *President*—Rev. J. H. Riddell, B.A., D.D., 223 Colony Street.

Manitoba Law School, Winnipeg. Chairman of Trustees—Hon. H. A. Robson, K.C., LL.D., Union Bank Building.

Manitoba Agricultural College. President—John Bracken, B.S.A., Agricultural College, St. Vital.

Visitor

SIR JAMES AIKINS, M.A., K.C., LL.D.
Lieutenant-Governor of Manitoba

Chairman of Board of Governors

ISAAC PITBLADO, M.A., LL.D., K.C.

Vice-Chairman of Board of Governors

JOHN A. MACHRAY, M.A., LL.B., K.C.

Chancellor

MOST REV. S. P. MATHESON, D.D., D.C.L.
Archbishop of Rupert's Land

Vice-Chancellor

RIGHT REV. MSGR. A. A. CHERRIER, LL.D.

President

JAMES A. MacLEAN, Ph.D., LL.D.

Honorary Bursar

JOHN A. MACHRAY, M.A., LL.B., K.C.

Registrar

W. J. SPENCE, B.A.

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Vice-Chairman:

JOHN A. MACHRAY, M.A., LL.B., K.C.

Secretary:

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NORMAN P. LAMBERT, B.A., of Winnipeg.
MR. A. J. COTTON, of Swan River.

Appointed for a three-year term expiring in 1922:

MR. THOMAS J. MURRAY, of Winnipeg.
MR. JOHN A. MACHRAY, of Winnipeg.
MR. WILLIAM IVERACH, of Isabella.

Appointed for a three-year term expiring in 1923:

MR. ISAAC PITBLADO, of Winnipeg.
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MR. J. R. LITTLE, of Brandon.

COUNCIL OF THE UNIVERSITY, 1920-1921

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MOST REV. S. P. MATHESON, D.D., D.C.L., Archbishop of
Rupert's Land, Chancellor.

Vice-Chairman:

RIGHT REV. MSGR. A. A. CHERRIER, LL.D.

President of the University:

JAMES A. MacLEAN, Ph.D., LL.D.

Appointed by the Faculty of the University:

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FRANK ALLEN, M.A., Ph.D.
N. B. MacLEAN, M.A., F.R.A.S.C.
J. N. FINLAYSON, M.Sc.

Appointed by the Manitoba Agricultural College:

JOHN BRACKEN, B.S.A., President.
G. A. SPROULE, B.A.

Appointed by Manitoba Medical College:

S. W. PROWSE, M.D., C.M., F.A.C.S., Dean.

Appointed by the College of Physicians and Surgeons of Manitoba:

THOS. TURNBULL, M.D.

Appointed by the Lieutenant-Governor-in-Council:

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MRS. R. F. McWILLIAMS, M.A.
WILLIAM A. McINTYRE, B.A., LL.D.
FRANK H. SCHOFIELD, M.A.
REV. JOHN L. BROWN
ALEXANDER McLEOD, Esq.

Elected by the Graduates of the University:

D. M. DUNCAN, M.A.
E. LOFTUS, M.A., LL.B., K.C.
DANIEL McINTYRE, M.A., LL.D.
W. J. SPENCE, B.A.

Appointed by St. Boniface College:

REV. H. BOURQUE, S.J., Rector.
RIGHT REV. MSGR. A. A. CHERRIER, LL.D.

Appointed by St. John's College:

VERY REV. G. F. COOMBES, M.A., D.D.
REV. E. A. W. GILL, M.A.

Appointed by Manitoba College:

REV. A. B. BAIRD, M.A., D.D.
REV. J. MACKAY, M.A., D.D., Principal.

Appointed by Wesley College:

REV. J. H. RIDDELL, B.A., D.D., President.
REV. A. STEWART, D.D.

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Advisory Committee on Commercial Education: G. W. Markle (Chairman), President MacLean, J. Parton, A. B. Stovel, C. C. Ferguson, Walter Mitham, Professor A. B. Clark, W. J. Spence, J. H. Curle (Secretary).

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UNIVERSITY FACULTY OF ARTS AND SCIENCES, 1921-1922

- WILLIAM TIER, M.A. (Tor.)
Dean and Chairman of Faculty.....72 Arlington Street
- FRANK ALLEN, M.A. (U.N.B. and Cornell), Ph.D. (Cornell), F.R.S.C.
Professor of Physics.....117 Harvard Ave.
- A. H. REGINALD BULLER, B.Sc. (Lond.), Ph.D. (Leipzig), D.Sc. (Birm.), F.R.S.C.
Professor of Botany.....MacLaren Hotel
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Professor of Chemistry.....7 Chelsea Court
- ARCH. BROWN CLARK, M.A. (Edin.)
Professor of Political Economy.....Suite 35, The Roslyn
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Professor of English.....948 McMillan Ave.
- CHESTER B. MARTIN, M.A. (U.N.B.), M.A., B.Litt. (Oxon.)
Professor of History.....696 Westminster Avenue
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Professor of Mathematics.....292 Assiniboine Ave.
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- ARTHUR ALEXANDER STOUGHTON, Ph.B. (Columbia)
Professor of Architecture.....Suite B, Amulet Apartments
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Professor of French Language and Literature.....
- JACOB HAROLD HEINZELMANN, B.A. (Illinois), Ph.D. (Chicago)
Professor of German Language and Literature.....880 Grosvenor Ave.
- HENRY ERNEST BLETCHER, B.Sc. (Phar.), F.C.I.C.
Professor of Pharmacy.....152 Lenore Street
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Professor of Latin and Greek.....196 Elm St.
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Professor of Latin and Greek.....The Deanery, St. John's
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Professor of Mathematics.....75 Sherbrook Street
- CHARLES H. O'DONOGHUE, D.Sc. (London), F.Z.S.
Professor of Zoology.....63 Genthon Street
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Professor of Philosophy and Social Ethics.....31 Evanson Street
- RUPERT C. LODGE, M.A. (Oxon.)
Professor of Logic and History of Philosophy.....92 Spence St.
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Assistant Professor of Physics.....88 Chestnut St.
- LLOYD A. H. WARREN, M.A. (Queen's), Ph.D. (Chicago), F.R.A.S.
Assistant Professor of Mathematics.....64 Niagara St.
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Assistant Professor of Chemistry.....101 Devon Court

AARON J. PERRY, M.A. (Acadia and Yale)	
<i>Assistant Professor of English</i>	61 Home St.
WILLIAM TIER, M.A. (Toronto)	
<i>Assistant Professor of Mathematics</i>	72 Arlington St.
JUSTIN S. DE LURY, B.A. (Toronto)	
<i>Assistant Professor of Geology</i>	202 Devon Court
EDWARD M. BURWASH, M.A. (Tor.), Ph.D. (Tor. and Chicago)	
<i>Assistant Professor of Geology ad interim</i>	3 University Place
JOHN W. SHIPLEY, B.A. (Man.), Ph.D. (Harvard), F.C.I.C.	
<i>Assistant Professor of Chemistry</i>	288 Lansdowne Ave.
HERBERT F. ROBERTS, B.A. (Kan.), M.Sc. (Kan.), LL.B. (North-western), F.A.A.S.	
<i>Assistant Professor of Botany</i>	62 Home St.
WILLIAM TALBOT ALLISON, M.A. (Tor.), Ph.D. (Yale)	
<i>Assistant Professor of English</i>	254 Furby Street
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<i>Assistant Professor of History</i>	124 Chestnut Street
JOHN W. TAYLOR, M.A. (Toronto), Ph.D. (Chicago)	
<i>Assistant Professor of Greek and Latin</i>	109 Woodhaven Blvd.
REGINALD F. JONES, M.A. (Liverpool).	
<i>Assistant Professor of Political Economy</i>	
C. D. MILLER, B.S. (Richmond), Ph.D. (Chicago)	
<i>Assistant Professor of Physics</i>	286 Balmoral Street
W. M. HUGILL, B.A. (Toronto)	
<i>Assistant Professor of Greek and Latin</i>	Y.M.C.A.
URSILLA N. MACDONNELL, M.A. (Queen's)	
<i>Dean of Women</i>	243 Elm St.
C. F. CURTIS RILEY, M.A. (Doane), B.S. (Michigan), M.S. (Ill.)	
<i>Assistant Professor of Zoology</i>	University of Manitoba
FLORA ROSS AMOS, B.A. (Tor.), Ph.D. (Columbia)	
<i>Assistant Professor of English</i>	334 Edmonton Street
FREDERICK CHARLES GREEN, M.C., M.A. (St. Andrews), Ph.D. (Cologne).	
<i>Assistant Professor of French</i>	9 Stuart Court.
CELINE A. BALLU, B.A. (Wis.)	
<i>Lecturer in French</i>	227 Ash St.
A. MARIE HAYNAUD, B.A. (Queen's)	
<i>Lecturer in French</i>	161 Maryland Street
CHARLES W. LOWE, M.Sc. (Birmingham)	
<i>Lecturer in Botany</i>	1588 Wolseley Ave. W.
EILEEN BULMAN, M.A. (Columbia), B.Sc. (Man.)	
<i>Lecturer in Zoology</i>	139 Middle Gate
JOSEPH E. HOWE, B.A. (Acadia and Yale), M.A. (Acadia)	
<i>Lecturer in History</i>	148 Langside St.
FREDERICK STANLEY NOWLAN, M.A. (Harvard)	
<i>Lecturer in Mathematics</i>	

This Faculty also includes one representative of each department of other Faculties which gives instruction in the Faculty of Arts and Sciences, the President and the Registrar.

SESSIONAL APPOINTMENTS FOR 1920-1921

- R. K. FINLAYSON, B.A. (Man.), LL.B. (Man.)
Special Lecturer in History.....Ste. G, Lee Court
- LILY A. McCULLOUGH, M.A. (Man.), LL.B. (Man.)
Assistant in Political Economy.....676 Spence Street
- JOHN A. M. EDWARDS, M.A. (Man.)
Assistant in English.....201 Balmoral Street
- A. KATHLEEN ELLIS, M.A. (Man.)
Assistant in German.....Y.W.C.A.
- ANDREW MOORE, B.A. (Man.), B.Sc. (Man.)
Assistant in Physiology and Biochemistry.
- LUCAS G. THOMPSON, B.Sc. (Man.)
Demonstrator in Geology.....41 Hargrave Street
- SOLOMON G. LIPSHITZ, B.Sc. (Man.)
Demonstrator in Chemistry.....Ste. 16, Virginia Apts.
- PAUL G. HIEBERT, M.A. (Tor.)
Demonstrator in Chemistry.....261 Furby Street
- CLIFFORD A. MERRITT.
Demonstrator in Chemistry.....808 Alverstone Street
- IVAN R. McHAFFIE, B.A. (Man.), B.Sc. (Man.)
Demonstrator in Chemistry.
- MICHAEL S. HOLLENBERG, B.A. (Man.)
Demonstrator in Physiology.

ADMINISTRATIVE STAFF

<i>President</i>	JAMES A. MACLEAN, Ph.D., L.L.D.
<i>Registrar</i>	W. J. SPENCE, B.A.
<i>Assistant Registrar</i>	W. B. H. TEAKLES, B.A.
<i>Honorary Bursar</i>	J. A. MACHRAY, M.A., L.L.B., K.C.
<i>Secretary University Land Board</i>	R. H. SHANKS.
<i>Accountant</i>	S. K. FORDE.
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<i>Dean of the Faculty of Engineering</i>	E. P. FETHERSTONHAUGH, M.C., B.Sc.
<i>Dean of the Faculty of Medicine</i>	S. W. PROWSE, B.A., M.D.
<i>Dean of Women</i>	MRS. URSILLA N. MACDONNELL, M.A.
<i>Librarian</i>	F. E. NUTTALL, M.A.

President's Secretary: NORA E. BELL, B.A.

Registrar's Assistants: HELENA MACVICAR, C. F. BLACK, B.A.,
G. C. YOUNG, HELEN M. PRESCOTT, GLADYS TREMAYNE,
LILLIAN COOK, MABEL NASH.

Bursar's Assistant: NELL V. RAISBECK.

Library Assistants: J. ADINA FALCONER, B.A., HORATIO WAL-
LACE, M.A., FLORENCE BISSETT, B.A.; EDNA GREER,
B.A. (Engineering Library).

Buildings and Grounds—Mechanic: A. BOWLEY; *Carpenter:* E. MOXAM
Caretakers: JAMES CHALK, ANDREW P. COX, CHARLES
ALLBUT, JOSEPH SAMMONS, HARRY ROBBINS, HARRY
PLANK, T. R. WATTS, T. BLAKER.

UNIVERSITY EXAMINERS, 1920-1921

ARTS AND SCIENCE

Classics: Professors Coombes and Clark, Rev. J. W. Matheson (St. John's), Professor Johnson (Wesley), Assistant Professor Taylor, Assistant Professor W. M. Hugill, Rev. J. Monaghan (St. Boniface), Rev. G. Hacault (St. Boniface).

Biblical Greek: Rev. Dr. Riddell (Wesley), Rev. Dr. Baird (Manitoba), Rev. J. W. Matheson (St. John's).

Hebrew: Rev. Dr. Stewart (Wesley), Rev. Dr. Perry (Manitoba), Rev. J. W. Matheson (St. John's), Rev. A. E. Hetherington (Wesley).

English: Professor Crawford, Rev. E. A. W. Gill (St. John's), Assistant Professor Perry, Assistant Professor Allison, Professor Greever (Wesley), Assistant Professor R. F. Argue (Wesley), Assistant Professor Amos, Rev. J. Monaghan (St. Boniface), Mrs. U. N. Macdonnell, Mr. J. A. M. Edwards.

French: Professor Osborne, Mr. A. D. Baker (St. John's), Miss C. A. Ballu, Miss C. F. Armstrong (Wesley), Miss A. M. Haynaud, Miss Lillian S. Johnston (Wesley), Rev. G. Hacault (St. Boniface).

German: Professor Heinzemann, Mr. A. D. Baker (St. John's), Miss A. K. Ellis, Miss Lillian S. Johnston (Wesley).

Icelandic: Professor Johnson (Wesley), Rev. R. Marteinsson.

Philosophy: Professor Wright, Professor Lodge, Rev. Dr. Baird (Manitoba), Rev. Dr. Elliott (Wesley), Rev. Dr. Fleming (Manitoba), Rev. A. E. Hetherington (Wesley), Rev. W. C. de Pauley (St. John's), Rev. P. Bournival (St. Boniface).

Political Economy: Professor Clark, Rev. Dr. Elliott (Wesley), Rev. J. F. Cross (St. John's), Assistant Professor Jones, Miss L. A. McCullough, Rev. A. Buron (St. Boniface).

History: Professor Martin, Assistant Professor Harvey, Professor Dadson (Wesley), Rev. E. A. W. Gill (St. John's), Mr. A. C. Cooke (Wesley), Mr. R. K. Finlayson, Mr. J. A. M. Edwards, Rev. G. Hacault (St. Boniface), Rev. J. Monaghan (St. Boniface).

Mathematics and Astronomy: Professor MacLean, Professor Wilson, Assistant Professor Warren, Rev. J. F. Cross (St. John's), Assistant Professor Tier, Assistant Professor Kingston, Professor O. T. Anderson (Wesley), Rev. A. Buron (St. Boniface).

Physics: Professor Allen, Rev. J. F. Cross (St. John's), Assistant Professor McClung, Assistant Professor Miller, Professor O. T. Anderson (Wesley), Mr. D. L. Twiss.

Botany: Professor Buller, Assistant Professor Roberts, Mr. C. W. Lowe.

Geology and Mineralogy: Assistant Professor DeLury, Assistant Professor Burwash.

Chemistry: Professor Barker, Assistant Professor Armes, Assistant Professor Shipley, Rev. A. Buron (St. Boniface).

Physiology: Associate Professor Cameron, Professor O'Donoghue, Dr. W. A. Gardner.

Zoology: Professor O'Donoghue, Mr. C. F. Curtis Riley, Miss Eileen Bulman, Rev. A. Buron (St. Boniface).

Biochemistry: Associate Professor Cameron, Professor Parker, Dr. C. R. Gilmour.

Pharmacy: Professor Bletcher, Mr. H. D. Campbell.

CURRICULA IN ARTS

The University of Manitoba confers two degrees in Arts, viz., Bachelor of Arts (B.A.) and Master of Arts (M.A.). The following are the requisites for proceeding in course to admission to these degrees:

I.—BACHELOR OF ARTS

Matriculation

The requirements for Matriculation for Arts are set forth in detail in the Matriculation Calendar.

Undergraduate Course in Arts

After having matriculated, the student of Arts is required to pass four examinations before being admitted to the degree of Bachelor of Arts, viz., the First, the Second, the Third and the Fourth Year Examinations.

FIRST YEAR

The course of study in the First Year in Arts is made up of five subjects, to be selected on the following plan (each subject representing four lecture hours per week or their equivalent, a laboratory period of either two or three hours to count as one lecture hour):

1. English (Courses 9, 10, 11, 12, page 34).
2. Mathematics (Courses 1, 4, page 52).
3. A foreign language (already taken for Matriculation), either Latin (Courses 1, 2, 3, 4, page 30); or Greek (Courses 3, 4, page 27); or French (Courses 1, 2, 3, 4, page 37); or German (Courses 3, 4, 5, 6, page 40).
4. Any *two* of the following* (the language already taken in 3 being barred): Latin (Courses 1, 2, 3, 4, page 30); Greek (Courses 1, 2 or 3, 4, page 27); Biblical Greek† (Courses 1, 2, page 29); French (Courses 1, 2, 3, 4, page 37); German (Courses 3, 4, 5, 6, page 39); Elementary German‡ (Courses 1, 2, page 39); Hebrew (Courses 1, 2, page 31); Icelandic (Courses 1, 2, 3, 4, page 41); History (Courses 1, 2, page 46); §Mathematics (Courses 5, 6, 7, 10, page 52); Physics (Courses 1, 2, 3, 4, page 57); Chemistry (Courses 1, 2, 21, 22, page 63).

N.B.—The subjects of the above curriculum will be grouped for time-table purposes by the University Faculty as follows, the groups being kept clear of conflicts with one another, but not necessarily the subjects within the groups: (a) English; (b) Mathematics (required); (c) Latin, Chemistry; (d) French, Icelandic, Hebrew; (e) German, Greek; (f) History, Mathematics (optional); (g) Physics.

SECOND YEAR

The course of study in the Second Year in Arts is made up of five subjects, to be selected on the following plan (each subject, except History, representing four lecture hours per week or their equivalent,

*A student who has not taken both Physics and Chemistry for Matriculation must elect one Science subject in either the First or the Second Year.

†This option is open only to those who have not taken Matriculation Greek.

‡This option is open only to those who have not taken Matriculation German.

§Students intending to take in their Third Year, Mathematics, or any division of the Natural and Physical Science involving Physics, are recommended to choose Mathematics as an option in First Year.

a laboratory period of either two or three hours to count as one lecture hour, and History being allotted three lecture hours per week):

1. English (Courses 13, 14, 15, 16, page 34).
2. History (Courses 3, 4, page 47).
3. A foreign language (already taken for Matriculation, and in the First Year), either Latin (Courses 5, 6, 7, 8, page 30); or Greek (Courses 7, 8, page 27); or French (Courses 7, 8, 9, 10, 11, 12, 13, 14, page 38); or German (Courses 7, 8, 9, 10, page 40).
4. Any *two* full subjects* or their equivalent, from the following list, subject to the time-table and other limitations below (the language already taken in 3 above being barred): Latin (Courses 5, 6, 7, 8, page 30); Greek (Courses 3, 4, *or* 5, 6, page 27); Biblical Greek (Courses 3, 4, page 29); French (Courses 7, 8, 9, 10, 11, 12, 13, 14, page 38); German (Courses 7, 8, 9, 10, page 40); Hebrew (Courses 3, 4, page 32); Icelandic (Courses 5, 6, 7, 8, page 41); Psychology and History of Philosophy (1921-22 Courses 1, 2, 1b, 2b, page 41); Economics (Courses 1, 2, page 49); Mathematics† (Courses 13, 16, page 52); Astronomy, half-subject only (Courses 91, 92, page 55); Physics (Courses 9, 10, and selected parts of 17, 18, 19, 20, page 57); Botany‡, half-subject only (Courses 1, 2, 3a, 4a, page 59); Geology‡, half-subject only (Courses 1, 2, 3, 4, page 61); Chemistry‡ (Courses 1, 2, 21, 22, page 63); Zoology‡, half-subject only (Courses 1, 2, 3, 4, page 69).

N.B.—The subjects of the above curriculum will be grouped for time-table purposes by the University Faculty as follows, the groups being kept clear of conflicts with one another, but not necessarily the subjects within the groups: (a) English; (b) History; (c) Latin, Physics; (d) French, Hebrew, Icelandic; (e) German, Greek, Geology with Astronomy; (f) Economics, Chemistry; (g) Psychology and History of Philosophy, Botany with Zoology, Mathematics.

Students proceeding to the Latin Philosophy Course in St. Boniface College take a special Second Year Course outlined on pages 44, 46.

A candidate, in order to pass in any paper at the examination of the First or the Second Year, must have 40 per cent. of the marks in that paper, and to pass the whole examination and obtain Third Class standing he must have 40 per cent. of the aggregate of the marks assigned and may not have failed on more than three full papers or their equivalent. If he fail to obtain 40 per cent., he shall be required to take the whole examination again. To obtain Second Class standing he must have 50 per cent. of the aggregate of the marks assigned. To obtain First Class standing, grade B, he must have 67 per cent. of the aggregate of the marks assigned. To obtain First Class standing, grade A, he must have 80 per cent. of the aggregate of the marks assigned.

The standing of a candidate on an individual subject is determined on the same basis as his standing on the whole examination.

*A student who has not taken both Physics and Chemistry for Matriculation must elect one Science subject in either the First or the Second Year.

†Mathematics is a prerequisite for Divisions A and B of the course in Natural and Physical Science.

‡ See outline of the divisions of the Natural and Physical Science Course, for which these courses are prerequisites.

Chemistry will be permitted as an option only in case it has not been taken in the First Year

Candidates who have failures registered against them in not more than two full papers, or four half papers or their equivalent, in the examination of the First Year or the Second Year may, as conditioned students, proceed with their course, with a view to subsequently obtaining the full standing of the year; but all conditions from the examination of the First Year must be removed before the commencement of the Third Year, and all conditions from the examination of the Second Year must be removed before the commencement of the Fourth Year.

These regulations should be read in conjunction with the regulations relating to Supplemental Examinations. (See pages 76-78.)

A student passing the examination of the First Year with First Class grade "B" or higher standing, may obtain from the Department of Education for Manitoba a First Class non-professional Teacher's Certificate. A student passing with Second Class standing may obtain a Second Class non-professional certificate. In each case the applicant for a certificate must satisfy the requirements of the Department in Bookkeeping, Agriculture, Music, Drawing, Botany and Geography.

No student shall be allowed to present himself for examination in any subject of the First or Second Years in Arts unless he presents from the University Faculty a certificate of having attended 75 per cent. of the lectures delivered in said subject, or is recommended for the examination by an affiliated college. This regulation, however, shall not affect any extra-mural candidate for examination.

THIRD AND FOURTH YEARS

After completing the First and Second Years, a student may proceed to the degree of Bachelor of Arts by pursuing any one of the following Courses, viz.:

(a) A General Course. All students who elect the General Course must take two subjects from Group A below and one subject from each of Groups B, C and D:

Group A—English, French, German, Latin, Greek, Hebrew.

Group B—Philosophy, Political Economy and History.

Group C—Physics, Chemistry, Biology, Astronomy with Geology.

Group D—An additional subject from Group A, an additional subject from Group B, an additional subject from Group C, Mathematics, Scripture.

(b) A Group Course, made up on the following plan*: Any two *majors*, or a *major* and two *minors*†, from the following list—Classical Greek (major and minor), Biblical Greek (minor only), Latin (major and minor), Hebrew (major), English (major and minor), French (major and minor), German (major and minor), Philosophy (major and minor)‡, History (major and minor), Political Economy (major and minor), and Mathematics (major and minor)§, Finance (minor in Fourth Year only).

*Owing to the numerous combinations of subjects allowed in the Third and Fourth Years under the system of group courses it is impossible in the present length of the teaching week to make provision for all such combinations. The University, therefore, while endeavoring to provide for all the various courses selected by students, will, in drawing up the time-table, have regard especially to the avoidance of conflicts between courses selected from the following groups:

(a) English, Latin, Greek, French, German, Hebrew; (b) English, History, Political Economy, Philosophy; (c) Natural and Physical Sciences, Mathematics, Political Economy.

† A student pursuing the work of a Group Course must in the Fourth Year continue the subjects begun in the Third Year, except that a student taking in the Third Year a major and two minors may, in the Fourth Year, for the two minors substitute a major in one of them. An exception to this rule is made in the case of the Finance Minor of the Fourth Year, which may be taken by any student who has taken in the Third Year a major or a minor in Political Economy or a major, minor or the full course in Mathematics and Physics.

‡ In Philosophy additional work is provided that is the equivalent of a major so that a full course may be taken in this subject.

§ Additional work is provided by the Department of Mathematics and Astronomy which together with certain courses given by the Physics Department are equivalent to a major. See pages 56 and 58.

- (c) A Course in Philosophy.
 (d) A Course in Latin Philosophy.
 (e) A Course in Mathematics and Physics.
 (f) A Course in Natural and Physical Science.

(Any one of four divisions.)

	Third Year	Fourth Year
Division A	Mathematics Physics Chemistry Geology and Mineralogy	Mathematics Physics, and either Chemistry or Geology and Mineralogy
Division B	Mathematics Physics Chemistry Astronomy	Mathematics Physics Astronomy
Division C	Physics Chemistry Any two of Botany, Geology and Mineralogy, Zoology	Physics Chemistry Any one of Botany, Geology and Mineralogy, Zoology
Division D	Botany Zoology Geology and Mineralogy Chemistry	Botany Zoology Geology and Mineralogy

For details as to the content of the above courses consult the outlines given under the various departmental captions, following the indication as to pages given below.

Subjects	Courses into Which They Enter	Pages
Classical Greek	Major, Minor, General	27
Biblical Greek	Minor	29
Latin	Major, Minor, General	30-31
Hebrew	Major, General	31-33
English	Major, Minor, General	33-37
French	Major, Minor, General	37-39
German	Major, Minor, General	39-41
Philosophy	Full Course, Major, Minor, General	41-42
Latin Philosophy	Full Course, General	43-46
History	Major, Minor, General	45-48
Political Economy	Major, Minor, General, Finance Minor	49-51
Mathematics	Full Course, Major, Minor, General, Finance Minor, Natural and Physical Science, Divisions A and B	52-56
Physics	Mathematics and Physics Course, Natural and Physical Science, Divisions A, B, C and General Course	57-58
Botany	Natural and Physical Science, Divisions C, D, General	59-60
Geology and Mineralogy	Natural and Physical Science, Divisions A, C and D, General	61-62
Chemistry	Natural and Physical Science, Divisions A, B, C, D, General	63-64
Zoology	Natural and Physical Science, Divisions C and D, General	69-70

N.B.— A new group course has been recently established and is announced in detail in the Agricultural and Home Economics Calendar. It consists of a major or two minors, chosen from the following: Latin, Greek, English, French, German, Philosophy, History and Political Economy, together with a major in Home Economics. Certain pre-requisite First and Second Year studies are prescribed.

II.—MASTER OF ARTS

The following are the requirements for the Degree of Master of Arts (M.A.):

1. A candidate for the degree of Master of Arts shall hold the degree of Bachelor of Arts from the University of Manitoba or an equivalent degree from this or another recognized University.

2. Two subjects, not necessarily in different departments, shall be taken. One of these shall be designated as the major subject and special attention shall be devoted to it. It shall be a subject which the student has already pursued in the Third and Fourth Years of his undergraduate course. The Minor subject shall be selected from a group related to the major subject. Not more than one-third of the student's time should be devoted to the minor subject.

3. The student shall submit a satisfactory thesis on some topic connected with his major subject.

4. The student shall pursue his work under the direction of two or more instructors of whom at least one shall be a member of the University Faculty, and his election of the Major and Minor courses and the subject of the thesis after being approved by the Departments in which his work will lie, must be submitted to the University Faculty of Arts and Sciences and the Board of Studies.

5. The minimum period spent in study for the M.A. degree shall be one academic year for students giving their whole time to the work. The minimum period for students not giving their whole time to M.A. work shall be two academic years, except in the case of students who attend a summer session in graduate work at some institution, acceptable to the Departments concerned, when the minimum time may be reduced to one year on recommendation of those Departments. Students required to take two years for this degree must receive standing on at least one-third of their work for the degree before entering upon their final year. The library conditions under which extra-mural students pursue their work should be satisfactory to the Departments concerned.

6. The Committee which shall pass upon the merits of the thesis shall consist of the instructors under whose direction the candidate's work has been performed, and at least one other recommended by the University Faculty of Arts and Sciences. The candidate shall pass such written examinations at such times and under such conditions as the committee may decide, and also undergo a final oral examination and public defence of the thesis, conducted by the committee.

7. The thesis shall be submitted at least ten days before the time of the oral examination. At least four printed or typewritten copies are required, three of which shall be deposited in the Library. It is desirable that uniformity in style, format, etc., be observed and in reference to these matters the candidate should consult the Registrar.

For the present the course of study in any department for the M.A. degree will in the main be outlined on request by the instructors in that department, and adapted to suit the needs, capabilities and previous training of the applicant. Request therefor should be made to the Board of Studies, and the Board must also approve the course after it is outlined. A limited number of M.A. courses are prepared in advance, and these are listed along with the undergraduate courses of the same department elsewhere in this Calendar.

CURRICULA IN SCIENCE

The University of Manitoba confers two degrees in Science, viz., Bachelor of Science (B.Sc.) and Master of Science (M.Sc.). The following are the requisites for proceeding in course to admission to these degrees:

I.—BACHELOR OF SCIENCE

Matriculation

The requirements for Matriculation for Science are set forth in detail in the Matriculation Calendar.

Undergraduate Course in Science

After having matriculated, the student of Science is required to pass four examinations before being admitted to the degree of Bachelor of Science, viz., the First, the Second, the Third, and the Fourth Year Examinations.

FIRST YEAR

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
1, 2; 3, 4	33	English.....	4		4	
1; 4; 5, 6	52	Mathematics.....	6		6	
1, 2; 3, 4	57	Physics.....	3	2	3	2
1, 2; 21, 22; 25, 26	63-64	Chemistry.....	3(+1)	6	3(+1)	6
		One of—				
5 6,	38	French.....	3		3	
1, 2 or 3, 4; 5, 6	39-40	German.....	3		3	

SECOND YEAR

9, 10; 17, 18	57	Physics.....	3	3	3	3
3, 4; 25, 26	63-64	Chemistry.....	3	6	3	6
7, 10, 13, 16	52	Mathematics I.....	6		6	
		Or two of—				
1, 2; 3, 4	69	Zoology.....	2	2	2	2
1, 2; 7, 8	59-60	Botany.....	2	2	2	2
1, 2; 7, 8	61	Geology.....	2	2	2	2
7, 16	52	Mathematics II.....	2		4	

THIRD YEAR

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
29, 30, 55, 56	53-54	Any three of— Mathematics.....	5		5	
31, 54, 91, 92, 93, 96	53-55	Astronomy.....	6	1	5	1
27, 28; 19, 20	57-58	Physics.....	3	3	3	3
7, 8; 11, 12						
33, 34	63-64	Chemistry.....	4	9	4	9
9, 10; 11, 12; 14	60	Botany.....	3	5	4	5
17, 18; 19, 20; 21; 22; 24	69-70	Zoology	4	6	4	6
11, 12; 13, 14, 19, 20; 22	61	Geology	5	2	4	5
9, 10; 13	65-66	Physiology.....	2	6	2	
To be outlined)		Anatomy.....	2	13	2	13
1, 2, 5, 6	68	Biochemistry	1	3	1	3

FOURTH YEAR

Students of the Fourth Year in Science will take two subjects selected from one of the following groups:

- A.—Mathematics, Physics, Chemistry, Geology
- B.—Botany, Zoology, Geology, Chemistry.
- C.—Zoology, Physiology, Anatomy.
- D.—Physiology and Chemistry, or Botany, or Physics.

The two subjects selected must have been taken already in the Third Year.

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
39, 40, 61, 62*	53-54	Mathematics				
29, 30; 25, 26; 31, 32	58	Physics.....	4	8	4	8
19, 20 and two of 13, 14; 15, 16; 17, 18 and 35, 36; and one of 37, 38;						
39, 40	63-64	Chemistry	5	11	5	11
15, 16; 17, 18	60	Botany	4	9	4	9
17, 18; 19, 20; 21; 22; 24	69-70	Zoology	3	6	3	8
15, 16; 17, 18; 23, 24	61-62	Geology.....	4	11	4	11
11, 12; 14; 19, 20	66	Physiology.....	2	6+	2	6+
3, 4, 7, 8, 9, 10	68	Biochemistry.....	1	3+	1	3+

* And others to be outlined.

II.—MASTER OF SCIENCE

The following are the requirements for the Degree of Master of Science (M.Sc.):

1. The candidate for the degree of Master of Science:

(a) Shall hold the degree of B.Sc. of the University of Manitoba or possess such qualifications as the Board of Studies after reference to the University Faculty of Arts and Sciences may deem to be the equivalent of this degree.

(b) Shall pass an examination in two courses of study, one closely related to the subject of his thesis and the other in an allied subject, and all his work shall be done under the direction of at least two members of the University Faculty of Arts and Sciences. One of these subjects shall be taken in the department in which the thesis falls, the other may be taken in the same or an allied department.

(c) Shall submit a satisfactory thesis based upon original work done under the direction of the department in which he has elected to do his research.

(d) Shall have completed at least one year's graduate work in one or more of the following departments of the University of Manitoba: Mathematics, Physics, Chemistry, Geology, Botany, Zoology, Physiology, Bio-Chemistry, Anatomy.

A graduate of this University may be permitted to meet the requirements of this clause by courses of study taken in another University if such work be approved by the Board of Studies after reference to the University Faculty of Arts and Sciences.

2. (a) The candidate shall make written application to the Board of Studies for permission to enter on a course leading to this degree. The outline of this course, drawn up in consultation with the University Faculty of Arts and Sciences, must receive the approval of the Board of Studies.

(b) The nature of the thesis shall subsequently receive the approval of the Board of Studies after reference to the University Faculty of Arts and Sciences.

3. Candidates possessing the necessary qualifications who serve for at least one entire session on the teaching staff of a Science Department of the University may on the recommendation of the University Faculty of Arts and Sciences be given credit for not more than one-third of the course of study usually given.

4. For the examination of each candidate the examining board shall consist of the Instructors under whose direction the work has been performed and one other recommended by the University Faculty of Arts and Sciences.

5. At least four printed or typewritten copies of the thesis shall be submitted by the candidate. One of these shall subsequently be deposited in the University Library. It is desirable that uniformity in style, format, etc., be observed and in reference to these matters the candidate should consult the Registrar.

Courses in Arts and Science in Detail

DEPARTMENT OF CLASSICS

F. W. Clark, B.A., Ph.D.	Professor of Latin and Greek
Very Rev. G. F. Coombes, M.A., D.D.	Professor of Latin and Greek
J. W. Taylor, M.A., Ph.D.	Assistant Professor of Greek and Latin
W. M. Hugill, B.A.	Assistant Professor of Greek and Latin

N.B.—For key to system of numbering courses, see page 4.

CLASSICAL GREEK

***1. Beginner's Greek Course.** This course is intended for students who have not had the opportunity of taking Greek for Matriculation. The purpose is to prepare students as rapidly as possible for the reading of Greek. Gleason's *Greek Primer* (American Book Co.), Lessons 1-XXXV. Four hours a week.

***2. Beginner's Greek Course.** Continuation of Course 1. Gleason's *Greek Primer*, Lessons LVIII-LXI, LXVIII, LXIX, LXXI, LXXII, and Colson's *Greek Reader* (Macmillan & Co.), selections from Parts I-IV. Four hours a week.

3. Greek Authors. This course is intended for those who have entered the University with Matriculation in Greek or who have completed Courses 1 and 2. Colson's *Greek Reader*, (Macmillan & Co.), Part VIII will be read. Easy sight translation. Four hours a week.

4. Greek Author. Continuation of Course 3. Euripides' *Hecuba*, (Bond and Walpole, Macmillan Elementary Classics), will be studied, with the exception of the choral odes, which will be read in translation. Easy sight translation. Four hours a week.

5. Greek Author. Plato: *Apology* and *Crito*. Dwyer-Seymour (Ginn & Co.). Easy sight translation. Four hours a week.

6. Greek Author. Homer, *Iliad*. Selections from first three books. Sterrett (American Book Co.). Easy sight translation. Four hours a week.

7. Herodotus. Book VII, 201 to end and Book VIII. Aeschylus' *Persae* in translation. Three hours a week.

8. Aristophanes. The *Birds*, omitting II, 801-1057, and the *Clouds*. (Merry's edition of both plays. Oxford Press.) Study of the origin, structure and content of Old Attic Comedy. Three hours a week.

9a. Homer. *Odyssey* I, VII, VIII, 1-235 and 385 to end, IX, XIII, XVI, XXIII. The Homeric age and Homeric problem. Sight translation. Three hours a week.

9b. Homer. The *Iliad*. (Not given in 1921-1922.)

10a. Plato. *Republic* I-IV, omitting I, 6-9, 13-15, 20-24; II, 17-21 and III, 1-11. Emphasis will be laid on the ethical and political content and its application to modern social and political problems. Sight translation. Three hours a week.

10b. Selections in Prose. Text: Poynton's *Flosculi Graeci*. (Not given in 1921-1922.)

11. Thucydides. *Peloponnesian War*, VII. Special attention will be given to the historical and literary value of the work. Two hours a week.

12. Greek Tragedy. Sophocles' *Antigone* and Euripides' *Medea*,

*By giving proof to the department that they have done sufficient work in the vacation to warrant it, students who have taken courses 1 and 2 may proceed with the regular work of the Second Year (5 and 6) or students who have completed 1, 2, 3, 4 may, on similar conditions, go on with the major or minor work of the Third Year.

omitting the choral odes, which will be read in English. History of Greek Tragedy. Two hours a week.

13. Greek History. Bury's *History of Greece*, chapters IV (p. 180) to IX. Lectures and readings on the period from 500 B.C. to 431 B.C. The Persian Wars, the development of the democracy in Athens and the growth of the Athenian Empire. Special topics and papers will be assigned. One hour a week.

14. Greek History. Continuation of 13, involving a study of Bury's *History of Greece*, chapters X to XVI. Lectures and readings on the period from 431 B.C. to 338 B.C. The Peloponnesian war, the Spartan and Theban hegemonies, the rise of Philip of Macedon. Special topics and papers will be assigned. One hour a week.

15. Greek Antiquities. (Not given in 1921-1922).

16. Greek Antiquities. Continuation of 15. (Not given in 1921-1922.)

17. Greek Poetry in Translation. The following works will be studied:

Pindar—*Pythian Odes* 4, 9; *Olympian Odes*, 7, 10, 13; *Nemean Odes*, 10 (Translation by Sandys in Loeb Library).

Aeschylus—*Choephoroi* (Tucker), *Prometheus Bound* (Golden Treasury Series).

Sophocles—*Electra*, *Oedipus Tyrannus* (Jebb).

Euripides—*Electra* (Murray), *Bacchae* (Way).

Aristophanes—*The Frogs* (Rogers).

Bucolic Poets—Theocritus, *Idylls* 1, 2, 7, 15, and *Epigrams* 1-24; Moschus, *Europa*. (Edmonds in Loeb Library.)

Greek Anthology—Selections. (Paton in Loeb Library.)

One hour a week.

18. Greek Prose Authors in Translation. The following works will be studied: Thucydides, *Peloponnesian War*, I, II, 34-54, V, 84-116 (Jowett). Demosthenes, *On the Crown*, *The Olynthiacs* (Kennedy). Plato, *Phaedo*, *Crito*, *Republic* V, X (Jowett). Aristotle, *Politics* III, VIII (Welldon); *Ethics* I, II (Williams); *Poetics* (Cooper). Theophrastus, *Characters* (Jebb). Lucian, *The Dream*, *Timon*, *A True Story* (Harmon in Loeb Library). Plutarch, *Morals*, vol. I. The account of the Laws and Customs of the Spartans and vol. V, That Brute Beasts Make Use of Reason (Goodwin). One hour a week.

19. Thucydides.

20. Greek Philosophy.

Senior Matriculation: Courses 1, 2, or 3, 4.

First Year, Arts: Courses 1, 2 or 3, 4.

Second Year, Arts: Courses 3, 4, or 5, 6.

Third Year, Arts: Major: Courses 7, 8, 9a, 10a, 13, 14.

Minor: Courses 9a, 10a, 13, 14.

General: Courses 9a, 10a.

Fourth Year, Arts: Major: Courses 9a, 10a, 11, 12, 13, 14, 17, 18.

Minor: Courses 9a, 10a, with either 13, 14 or 17, 18.

General: Courses 9a, 10a.

Graduate Courses: 19, 20.

BIBLICAL GREEK

(Courses 1, 2, 3, 4, 7, 8, 11, 12 are given only in the affiliated Colleges; courses 5, 6, 9, and 10 are given in the University.)

1, 2. Biblical Greek I. Moulton's First Greek Reader in New Testament Greek will be covered together with the corresponding sections of Moulton's Introduction to New Testament Greek. First term: Moulton's Introduction, Exercises 1 to 27; Second term: Moulton's Introduction completed. Four hours a week.

3, 4. Biblical Greek II. The Book of Acts will be read and training in continuous Greek composition will be given, based on the text read, and with reference to Burton's New Testament Moods and Tenses. Exercises in sight translation of simple Hellenistic Greek will be given from time to time. First term: Acts 1-14. Second term: Acts 15-28. Four hours a week.

5. Synoptic Gospels. The course will consist of the reading of the Synoptic Gospels in Greek with brief introductory and explanatory notes. Three hours a week. (Not for 1921-1922.)

6. Pauline Epistles and Apocrypha. Reading of Romans, Corinthians 1 and 2, Galatians, Thessalonians 1 and 2, Maccabees 1, Judith and the Wisdom of Solomon, with brief introductory and explanatory notes. Three hours a week. (Not for 1921-1922.)

7. History of New Testament Times. The period covered is 165 B.C. to 135 A.D. The prescribed text is W. D. Morrison's *The Jews under the Roman Empire* (Stories of the Nations). One hour a week.

8. Pauline Epistles and Apocrypha. A course complementary to Course 6. Lectures and reading on the "Introduction" to books read in Course 6. Case, Environment of Early Christianity and Charles, *Between the Old and New Testaments*, will form the basis of study. One hour a week.

9. New Testament Epistles and Patristics. Reading of Philippians, Philemon and Hebrews; also Justin Martyr's Apologies 1. The edition of the latter by Gildersleeve (American Book Co.) is recommended. Three hours a week.

10. New Testament Epistles and Apocrypha. Reading of Timothy 1 and 2; James; Peter 1; and John 1, 2 and 3; also of Ecclesiasticus (*The Wisdom of Jesus the Son of Sirach*). Three hours a week.

11. Primitive Christianity. Harnack's *Mission and Expansion of Christianity*, Vol. 1. (Putnam), will form the basis of study. Lectures and reading. One hour a week.

12. The Graeco-Roman World. Cumont's *Oriental Religions in Roman Paganism* (Open Court, Chicago), will form the basis of study. Lectures and reading. One hour a week.

First Year, Arts: Courses 1, 2.

Second Year, Arts: Courses 3, 4.

Third Year, Arts: Minor: Courses 7, 8, 9, 10.

Fourth Year, Arts: Minor: Courses 9, 10, 11, 12.

Courses 1 and 2 (and consequently also 3 and 4) are open only to such students as have not taken Greek for Matriculation.

Nestle's New Testament in Greek and the British and Foreign Bible Society's Old Testament in Greek are convenient texts which can be easily secured. Where annotated texts are desired, the editions of the books read in the Cambridge Bible in Greek will be found useful.

LATIN

1. **Prose Composition.** Bradley-Arnold Latin Composition. Exercises 1-12, omitting 4. One hour a week.

2. **Prose Composition.** Bradley-Arnold continued. Exercises 14-24, omitting 19. One hour a week.

3. **Prose Authors and Sight Translation.** Text: A Latin Reader, by A. Petrie (Oxford Press). Selections 10-15 and 32-38 will be studied. Three hours a week.

4. **Verse and Sight Translation.** Text: A Latin Reader, by A. Petrie (Oxford Press). Study of the following selections from Vergil and Ovid: 91-100, 102, 103, 124, 125, 129-131, 139. Three hours a week.

5. **Prose Composition.** Bradley-Arnold Latin Composition. Exercises 41-55, omitting 43, 44, 47, 48, 51. One hour a week.

6. **Prose Composition.** A continuation of Course 5. Exercises 56-65, omitting 62. One hour a week.

7. **Prose Authors and Sight Translation.** Text: A Latin Reader, by A. Petrie (Oxford Press). Study of the following selections from Sallust, Livy and Pliny: 46, 49-66, 68, 69, 71, 72. Three hours a week.

8. **Verse Authors and Sight Translation.** (a) Selections from Catullus and Horace as found in Petrie's Latin Reader (Oxford Press). (b) Selected Epigrams from Martial by Post (Ginn & Co.). The following epigrams amounting to about 450 lines will be read. Book I: 3, 9, 10, 13, 16, 29, 32, 38, 47, 75, 79, 98. Book II: 5, 11, 16, 41, 69, 80, 88, 90. Book III: 12, 14, 15, 35, 38, 44, 52, 63. Book IV: 15, 41, 44. Book V: 8, 9, 29, 34, 43, 47, 49, 56, 58. Book VI: 8, 17, 28, 48. Book VII: 3, 83, 92. Book VIII: 9, 10, 12, 17, 69, 76. Book IX: 10, 15, 46, 68, 81, 97. Book X: 39, 47, 61, 62, 74, 96, 104. Book XI: 35, 84. Three hours a week.

9, 10. **Prose Composition and Sight Translation.** Translation into Latin of representative passages from English authors. Practice in sight translation. One hour a week.

11. **Roman Elegiac Poetry.** (a) Select Poems of Catullus by Simpson (Macmillan), Nos. 1, 2, 4, 7, 9, 11, 13, 14, 22, 30, 34, 38, 43, 45, 50, 53, 61, 62, 64, 65, 72, 75, 83, 87, 92, 96, 107, 109. (b) Roman Elegiac Poets by Harrington (American Book Co.). Tibullus: I, 1, 3, 10; II, 1, 2, 5. Propertius: I, 1, 2, 8, 8b, 22; II, 10, 11, 12, 13, 31; III, 1, 3, 7, 9; IV, 6, 11. Ovid, Amores: I, 1, 3, 15; II, 6, 16; III, 9, 15. Two hours a week.

12. **Caesar.** Study of the career of Caesar, with the reading of *Bellum Gallicum*, Book V, 1-23; Book VI, 13-29; Book VII, 1-31; 57-90; and of *Bellum Civile*, Book III, 1-33; 58-75; 82-112. For reference, Warde Fowler's *Caesar* (Heroes of the Nations Series; G. P. Putnam's Sons). Two hours a week.

13. **Cicero, Pliny and Erasmus.** A study of epistolary Latin. (a) Cicero: Selected Letters (Abbott, Ginn & Co.). Epistles 12, 13, 25, 36, 40, 41, 49, 50, 60, 63, 72, 73, 74, 75, 76, 78, 80, 83, 86, 87, 90, 91, 92, 95, 97. (b) Pliny: Selected Letters (Allen, Oxford Press). Epistles I, 13, 15; II, 6, 20; III, 16, 21; IV, 13, 19. VII, 9; VIII, 16. IX, 23; X, 33, 34, 96, 97. (c) Erasmus: Selections (Allen, Oxford Press) Nos. 3, 5, 6, 8, 20, 26, 27. Three hours a week.

Private reading for Fourth Year only. (a) Cicero Nos. 16, 51, 64, 100. (b) Pliny, I, 6; III, 5; VI, 16; VII, 27; IX, 6, 36. (c) Erasmus, 10.

13b. **Cicero.** Orations. (Not given in 1921-1922.)

14. **Horace.** A study of the life and poetry of Horace with the reading of (a) Odes I, 1-4, 9-12, 14, 18, 21, 22, 24, 34, 37, 38; II, 1-3, 7, 10, 13-17;

III, 1, 2, 5, 6, 8, 9, 13, 14, 18, 21, 23, 29, 30; IV, 3, 5, 7, 15. (b) Satires I, 1, 5, 9. (c) Epistles. I, 1, 2, 6, 7, 10, 11, 13, 14, 20. Three hours a week.

Private reading for Fourth Year only: (a) Odes I, 5, 28; III, 3, 4, 16; (b) Epodes 2, 16. (c) Satires, I, 6; II, 1.

14b. **Vergil.** Selections. (Not given in 1921-1922.)

15. **Lucretius.** Study of the philosophy and literary art of Lucretius. Reading of Book I, 1-634; Book III, 1-349 and 830 to end; Book V, 1-431 and 728 to end. Two hours a week.

16. **Tacitus.** The Agricola and the following selections from the Annals: XIII, 1-24; XIV, 1-59; XV, 33-74. Two hours a week.

For private reading: Annals, XIII, 6-10; XIV, 40-59; XV, 33-37.

17. **Roman Antiquities.** Course of lectures, illustrated by lantern slides, particularly on Roman Private Life. The topics discussed will in the main be those treated in Fowler's Social Life at Rome in the Days of Cicero and in Tucker's Life in the Roman World of Nero and St. Paul. Other books valuable for reference are: Johnston, Private Life of the Romans; Jones, Companion to Roman History; Friedlaender-Freese, Roman Life and Manners under the Early Empire.; Huelsen-Carter, The Roman Forum; Platner, Ancient Rome. One hour a week.

18. **Latin Literature.** A course designed to give students a general view of Latin Literature. Particular stress will be laid on authors which are not studied in the regular reading courses. Representative selections will be read in the best English translations. One hour a week.

19, 20. **Roman History.** A study of the period from 133 B.C. to 37 A.D. Pelham: Outlines of Roman History will serve as the basis for the course. Study of special topics in Mommsen; Taylor, Constitutional and Political History of Rome; Capes, Early Roman Empire; Shuckburgh, Life of Augustus. One hour a week. (Not given in 1921-1922.)

21. **Vergil.** Eclogues, Georgics, Aeneid.

22. **Tacitus.** Annals, I-VI.

23, 24. **Latin Prose.**

Senior Matriculation: Courses 1, 2, 3, 4.

First Year, Arts: Courses, 1, 2, 3, 4.

Second Year, Arts: Courses 5, 6, 7, 8.

Third Year, Arts: Major: Courses 9, 10, 11, 12, 13, 14, 17, 18.

Minor: Courses 13, 14, with *either* 9 and 10 *or* 17, 18.

General: Courses 13, 14.

Fourth Year, Arts: Major: Courses 9, 10, 13, 14, 15, 16, 17, 18.

Minor: Courses 13, 14 with *either* 9 and 10 *or* 17, 18.

General: Courses 13, 14.

Graduate Courses, 21, 22, 23, 24.

HEBREW

Instruction in Hebrew is provided only in the affiliated Colleges.

1, 2. Inductive study of the Hebrew language, including the fundamental principles of the grammar, the acquisition of a vocabulary, and translation of English into Hebrew. Harper, Elements of Hebrew and Introductory Hebrew Method and Manual. First term: Lessons 1-15. Second term, Lessons 16-29. Four hours per week.

3, 4. Continuation of Courses 1 and 2. Harper, Elements of Hebrew and Introductory Hebrew Method and Manual; Harper's or Davidson's Elements of Syntax. First term: Lessons 30-40. Second term: Lessons 41-50, and Book of Jonah, with special reference to syntax and vocabulary. Four hours per week.

5. **Old Testament History.** Paton, History of Syria and Palestine, Chapters 1-9. Summer reading: English Bible, Genesis, Exodus, Leviticus, Numbers, Joshua, Judges, I Sam. 1-7, or Lectures based on the period and topics covered in above. Two hours per week.

6. **Old Testament History.** Paton, History of Syria and Palestine, chapter 10. Kent, The Divided Kingdom. Kent, Babylonian, Persian and Greek Periods, pages 1-267. Summer reading, I and II Samuel, I and II Kings, I and II Chronicles, Ezra and Nehemiah. Two hours week.

7. **Introduction.** (a) Textual Criticism: A. S. Geden, Introduction to the Hebrew Bible, Chapters 1-5. (b) Pentateuchal Criticism: Introduction to the Hebrew Bible, A. S. Geden, Chapter VI or G. B. Gray, A Critical Introduction to the Old Testament, Chapters I-VI, and Introduction to the Former Prophets, G. B. Gray, Chapters VII-IX. Two per hours per week.

8. **The Latter Prophets and the Writings.** G. B. Gray, Chapters 10-24. Summer reading, Cornill, The Prophets of Israel. Two hours per week.

9. **Historical Geography.** Geo. Adam Smith. For 1922-1923 and alternate years. One hour per week.

10. **Archaeology.** Barton, Archaeology and the Bible, pages 1-218. Session 1922-1923 and alternate years. One hour per week

11. **Old Testament Religion.** Marti, Religion of the Old Testament or Montefiore, Hibbert Lectures, Chapters 1-5. One hour per week. For 1921-1922 and alternate years.

12. **Social Ethics.** Kent, The Social Teachings of the Prophets and Jesus, pages 1-173. For Session 1921-1922. One hour per week.

Exegetical Work

†13. **Historical Hebrew.** Genesis, Chapters 12, 13, 14, 22, 23, 49. Exodus, Chapters 3, 6, 13, 15. Two hours per week.

†14. **Legal Codes.** Leviticus, Chapters 16, 19. Numbers, Chapters, 11, 16, 21. Deuteronomy, Chapters 11, 12, 18. Two hours per week.

†15. **Prophetical Literature.** Isaiah, Chapters 5, 6, 7, 8, 9, 28, 37, 38. Two hours per week.

†16. **Prophetical Literature.** Isaiah, Chapters 40, 41, 42, 45, 47, 52, 53, 58, 64. Two hours per week.

†17. **Hebrew Poetry.** Judges, Chapter 5; I Samuel, Chapter 2:1-10; II Samuel, Chapter 1:19-27; Habakkuk, Chapter 3; Psalms 2, 6, 8, 14, 16, 19, 23. One hour per week.

†18. **Wisdom Literature.** Job, Chapters 2, 3:14-26, 4, 14, 25, 31:1-11 and verses 35-40, 32, 38:1-27, 42. One hour per week.

First Year, Arts: Courses 1, 2.

Second Year, Arts: Courses 3, 4.

Third Year, Arts: Major: Courses 5, 6, 11, 12, 13, 14, 15, 16, 17, 18.
General: Courses 5, 6, and 13, 14, or 1, 2.

Fourth Year, Arts: Major: Courses 7a, 7b, 8, 11, 12, 13, 14, 15, 16, 17, 18.

General: Courses 7a, 7b, 8, and 15, 16 or 3, 4.

†In the treatment of Courses 13-18, special attention will be paid to questions of grammar, syntax, introduction, exegesis and history. Students are advised to consult the appropriate volumes of the Century Bible and the Cambridge Bible.

SCRIPTURE

Instruction in Scripture is provided only in the affiliated Colleges.

1. **Old Testament Scripture.** Isaiah 40-66, (Skinner, Cambridge Bible). In addition to mastering the contents of the book, students will be required to give attention to the contributions to its interpretation of critical, archaeological and historical research.

2. **New Testament Scripture.** Luke (Century Bible). Ramsay, Luke, The Physician.

Third Year, Arts: General: Courses 1, 2.

Fourth Year, Arts: General: Courses 1, 2.

DEPARTMENT OF ENGLISH

A. W. Crawford, M.A., Ph.D.....	Professor
Aaron J. Perry, M.A.....	Assistant Professor
W. T. Allison, M.A., Ph.D.....	Assistant Professor
Flora Ross Amos, B.A., Ph.D.....	Assistant Professor
John A. M. Edwards, M.A.....	Assistant

N.B.—For key to system of numbering courses, see page 4.

†1, 2. **English Composition.** Text: The Essentials of English Composition, and Illustrative Examples of English Composition, by James W. Linn (Scribner's). The course is designed especially for students in Senior Matriculation to the Engineering and Medical Courses. Short themes will be required of all students throughout the year, and longer themes at the discretion of the instructor. (1) First Term: Part I, with Examples. (2) Second Term: Part II, with Examples. Two hours a week.

3, 4. **English Literature.** A study of leading English poets and prose writers, from Chaucer to the present time. Text: English Poems from Chaucer to Kipling, edited by Parrott and Long (Ginn & Co.). (1) First Term: (a) pages 1-143 (Chaucer to Burns); (b) Shakespeare's Twelfth Night; (c) Bunyan's Pilgrim's Progress, Part I. (Macmillan's Pocket Classics); (d) Goldsmith's The Vicar of Wakefield (Macmillan's Pocket Classics). (2) Second Term: (a) pages 144-302 (Wordsworth to Kipling); (b) Lamb's Essays of Elia (Everyman's Library); (c) Scott's Ivanhoe (Everyman); (d) Stevenson's Travels With a Donkey, etc. (Macmillan's Pocket Classics). Two hours a week.

5, 6. **English Composition** Text: (a) Theory and Practice of Technical Writing, by Samuel Earle (Macmillan). This course is designed for students of the first year Engineering Course. Short themes will be required of all students throughout the year, and longer themes at the discretion of the instructor. First Term, Part I; Second Term, Part II. (b) Readings and discussions based on Addresses to Engineering Students, by Waddell and Harrington. Pub. Waddell & Harrington, Kansas City, Missouri. One hour a week.

7, 8. **English Literature.** (1) First Term: (a) Shakespeare's As You Like It (Macmillan's Pocket Classics). (b) Scott's Kenilworth (Everyman's Library). (c) Tennyson's The Coming of Arthur, Gareth and Lynette (Macmillan's Pocket Classics). (2) Second Term: (a) Shakespeare's Julius Caesar (Macmillan's Pocket Classics). (b) Stevenson's

† See note under Courses 9, 10.

The Master of Ballantrae (Macmillan's Pocket Classics). (c) Tennyson's Lancelot and Elaine, Guinevere (Macmillan's Pocket Classics). One hour a week.

9, 10. English Composition. Text: The Essentials of English Composition, and Illustrative Examples of English Composition, by James W. Linn (Scribner's). A study of the principles and practice of English composition. The writing of numerous original compositions during the year. Study of selections from modern prose writers, under the direction of the instructor. (1) First Term: Part I, with Examples. (2) Second Term: Part II, with Examples. Two hours a week.

(Note—In Courses 1, 2, 9, 10, 13, 14, a maximum of twenty marks will be allowed for the class work of each term, including essays. This work will be examined by the instructor. A maximum of thirty marks will be allowed for the final examination paper for each term. The marks for term work will not be counted in determining the award of scholarships).

11, 12. English Literature. Texts: History of English Literature, by W. J. Long (Ginn & Co.); English Poetry: Its Principles and Progress, by Gayley and Young (Macmillan).

(1) First Term: (a) History—Chapters VII-IX. (b) Prose—Bunyan's Pilgrim's Progress, Part I; Addison and Steele's The De Coverley Papers, (King's Treasuries, Dent). (c) Poetry—Milton's L'Allegro, Il Penseroso, Lycidas; Dryden's Alexander's Feast; Pope's Rape of the Lock; Gray's Elegy in a Country Churchyard; Goldsmith's Deserted Village; Burns's Tam o' Shanter, The Cotter's Saturday Night.

(2) Second Term: (a) History—Chapters X-XI. (b) Prose—Lamb's Essays of Elia; Ruskin's Sesame and Lilies (King's Treasuries, Dent). (c) Poetry—Wordsworth's Tintern Abbey, Ode to Duty, London, 1802, Composed upon Westminster Bridge, It is a Beauteous Evening, The World is too Much With Us, Scorn not the Sonnet; Coleridge's Ancient Mariner; Byron's Prisoner of Chillon, Sonnet—On Chillon, Stanzas from Childe Harold; Shelley's Ode to the West Wind, To a Skylark; Keats's Ode to a Nightingale, On First Looking into Chapman's Homer, On the Grasshopper and the Cricket, La Belle Dame Sans Merci; Tennyson's Oenone, The Lady of Shalott, Ulysses, Tithonus; Browning's Home Thoughts from Abroad, Home Thoughts from the Sea, Evelyn Hope, My Last Duchess, Andrea del Sarto; Arnold's Rugby Chapel, Dover Beach. Two hours a week.

***13, 14. English Prose.** Text: Modern English Prose, edited by Carpenter and Brewster (Macmillan). A study of numerous examples of modern English prose, with practice in writing. Minimum requirement of 2000 words in the written composition of each term.

(1) First Term: (a) Study and Practice, chiefly in Description and Narration, pages 1-214. (b) Stevenson's "Virginibus Puerisque" (Scribner's Modern Students' Library).

(2) Second Term: (a) Study and Practice chiefly in Exposition and Argument, pages 215-463. (b) Charles Reade's "Never Too Late to Mend." Assistant Professor Allison.

15, 16. English Literature.

(1) First Term: (a) Keats's The Eve of St. Agnes; Tennyson's Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur; Lowell's The Vision of Sir Launfal (Gayley & Young); Scott's Marmion; Arnold's Sohrab and Rustum (Macmillan's Pocket Classics). (b) Scott's Quentin

Durward (Everyman's Library); Hardy's *Far from the Madding Crowd* (Cornell Series).

(2) Second Term: (a) Chaucer's Prologue to the *Canterbury Tales* (Gayley & Young). (b) Shakespeare's *Romeo and Juliet*, *Coriolanus*. Two hours a week. *Professor Crawford and Assistant Professor Perry*.

Note—These courses include a knowledge of the life and times of the authors read, from Long and other sources, and an ability to render Chaucer into modern English prose.

17. Chaucer. The *Canterbury Tales*: The Prologue, The Knight's Tale, The Tale of the Man of Lawe, The Nonne Preestes Tale, The Pardoner's Tale, The Second Nonnes Tale. Texts: Selections from Chaucer, edited by E. A. Greenlaw (Scott, Foresman & Co.); Chaucer, The Tale of the Man of Lawe, etc., edited by W. W. Skeat (Clarendon Press); Chaucer, by A. W. Ward (English Men of Letters). Two hours a week. *Assistant Professor Perry*.

18. Middle English. Langland's *Piers the Plowman*: Prologue and Passus I-VII, edited by W. W. Skeat (Clarendon Press); Translation of The Pearl, and Sir Gawain and The Green Knight, in Romance, Vision, and Satire, edited by Jessie L. Weston (Houghton, Mifflin & Co.); Translation of The Owl and the Nightingale, in The Chief Middle English Poets, edited by Jessie L. Weston (Houghton, Mifflin & Co.). Reference: Baldwin's *Introduction to Mediaval Literature* (Scribner's).

(*Note*—Miss Weston's books need not be bought by students. The translations may be read in the Library.) *Assistant Professor Perry*.

19. Spenser and Milton. (a) Spenser: *Faerie Queen*, Book 1. Text: Edited by Kitchin (Clarendon). Church: Spenser (English Men of Letters). (b) Milton: *Comus*; *Areopagitica*; *Sonnets*; *Paradise Lost*, Books I, II, III, IV; *Samson Agonistes*; *Pattison*: Milton (English Men of Letters). Three hours a week. *Assistant Professor Allison*.

20. Eighteenth Century Literature. (a) Prose—Swift: *Gulliver's Travels* (Macmillan's Pocket Classics); Addison and Steele: *The Sir Roger de Coverley Papers* (Macmillan's Pocket Classics); Goldsmith: *She Stoops to Conquer* (Macmillan's Pocket Classics); Boswell's *Life of Johnson*, abridged and edited by C. G. Osgood (Scribner's Modern Students' Library). (b) Ballads—*Old English Ballads*, edited by Armes (Macmillan's Pocket Classics). (c) Poems—Pope: *Windsor Forest*; *Essay on Criticism*; *Epistle to Dr. Arbuthnot*; *Essay on Man*; Johnson: *Vanity of Human Wishes*; Collins: *Ode to Simplicity*; *Ode to Evening*; *The Passions*; Gray: *Ode on the Spring*; *Ode on Eton College*; *Hymn to Adversity*; *Elegy in a Country Churchyard*; *The Progress of Poesy*; *The Bard*; Cowper: *Selections from The Task*; *On the Receipt of My Mother's Picture*; Burns: *Mary Morison*; *The Two Dogs*; *The Cotter's Saturday Night*; *To a Mouse*; *To a Mountain Daisy*; John Anderson; *Highland Mary*; *Scots Wha Hae*; *Is There for Honest Poverty*; Blake: *Song*; *Introduction to "Songs of Innocence"*; *The Echoing Green*; *The Lamb*; *Holy Thursday*; *The Defiled Sanctuary*; *The Tiger*; *The Garden of Love*; *From "Milton"*; *To the Queen*. Text: *English Poems of the Eighteenth Century*, edited by Bronson (University of Chicago Press). Two hours a week. *Assistant Professor Allison*.

21. The English Drama. *Everyman*; *The Wakefield Second Shepherd's Play*; *Udall's Ralph Roister Doister*; *Norton and Sackville's Gorboduc*; *Marlowe's The Jew of Malta*; *Jonson's Volpone*; *Beaumont and Fletcher's The Knight of the Burning Pestle* (Everyman's Library, numbers 381, 492, 383, 489, 506). *Introduction to Shakespeare*, by MacCracken, and others (Macmillan): Chapters II, "English Drama Before

Shakespeare"; III, "The Elizabethan Theatre"; IV, "Elizabethan London." Two hours a week. *Professor Crawford.*

22. **Shakespeare.** King John; Macbeth; Hamlet; Antony and Cleopatra; The Winter's Tale; The Tempest (Tudor Shakespeare, Macmillan). Introduction to Shakespeare, by MacCracken, and others (Macmillan). Reference: Hamlet, An Ideal Prince, and other Essays by A. W. Crawford (Copp Clark). Three hours a week. *Professor Crawford.*

23. **The Romantic Poets.** English poems of the Nineteenth Century, edited by Bronson (University of Chicago Press); Selections from Wordsworth, Coleridge, Shelley and Keats. Lives of the Authors in English Men of Letters Series. Three hours a week. *Professor Crawford.*

24. **The English Novel.** The Early Novel: Extracts in Simond's Introduction to English Fiction (Heath); Goldsmith's Vicar of Wakefield (Everyman's Library); Walpole's Castle of Otranto, (King's Classics); Edgeworth's Castle Rackrent (Everyman); Thackeray's Henry Esmond (Everyman); Dickens's Dombey and Son (Everyman); George Eliot's Silas Marner (Everyman); Stevenson's Master of Ballantrae (People's Library); Hardy's The Return of the Native (Scribner's); William de Morgan's Joseph Vance (Heineman); Text: Development of the English Novel, by W. L. Cross (Macmillan). Two hours a week. *Assistant Professor Allison.*

(Note—As preparation for class study, students should read these novels carefully during the preceding summer.)

25. **Tennyson.** (a) Shorter Poems: The Two Voices; The Palace of Art; The Lotus-Eaters; St. Simeon Stylites; Locksley Hall; The Vision of Sin; Break, Break, Break; Ode on the Death of the Duke of Wellington; In the Valley of Caunteretz; Locksley Hall (Sixty Years After); Crossing the Bar. (b) In Memoriam. (c) Maud. (d) Idylls of the King: The Coming of Arthur; The Holy Grail; Guinevere; The Passing of Arthur. Texts: Works of Tennyson, edited by Hallam, Lord Tennyson (Macmillan); Tennyson, by A. C. Benson (Methuen's Shilling Library). Two hours a week. *Assistant Professor Allison.*

26. **Browning.** My Last Duchess; Count Gismond; The Flight of the Duchess; The Lost Leader; In a Gondola; The Last Ride Together; By the Fireside; The Laboratory; Gold Hair; The Statue and the Bust; Up at a Villa—Down in the City; Pictor Ignotus; Fra Lippo Lippi; The Bishop Orders his Tomb; How it Strikes a Contemporary; Abt Vogler; Evelyn Hope; Memorabilia; Prospice; Childe Roland to the Dark Tower Came; A Grammarian's Funeral; An Epistle of Karshish; Caliban upon Setebos; Saul; Rabbi Ben Ezra; Confessions; In a Balcony; Old Pictures in Florence; The Boy and the Angel; A Tale; Why I am a Liberal; Epilogue to "Asolando." Text: Browning's Selected Poems, edited by Porter and Clarke (Crowell, N.Y.); Life of Browning, by Edward Dowden (Everyman). Three hours a week. *Professor Crawford.*

27, 28. **Old English.** Text: Bright's Anglo-Saxon Reader (Holt). (1) First Term: Phonology, Grammar. Extracts I-V, XII, XVI, XVIII, XIX. (2) Second Term: Grammar, Versification. Extracts XX, XXI, XXII, XXIII, XXIV. Judith, edited by Albert S. Cook (D. C. Heath & Co.). Two hours a week. *Assistant Professor Perry.*

29, 30. **History of the English Language.** Texts: Jespersen's Growth and Structure of the English Language (Stechert); Krapp's Modern English, Its Growth and Present Use (Scribner's); Smith's Studies in English Syntax (Ginn & Co.).

References: Noble's Story of English Speech (Badger); Emerson's History of the English Language (Macmillan); Greenough and Kittredge's

Words and Their Ways in English Speech (Macmillan). One hour a week. *Assistant Professor Perry.*

31. Nineteenth Century Literature. (a) Prose. Carlyle's *Heroes and Hero-Worship* (Everyman's Library); Ruskin's *Crown of Wild Olive* (Everyman). (b) Poetry. *English Poems of the Nineteenth Century*, edited by Bronson (University of Chicago Press): Selections from Mrs. Browning; Clough; Arnold; Rossetti; Swinburne. One hour a week. *Assistant Professor Allison.*

32. Contemporary and Canadian Poets. (a) British contemporary poets. Text: *Poems of To-Day*, published for the English Association (London), by McClelland & Stewart (Toronto). Selections from Robert Bridges, Rupert Brooke, W. H. Davies, Walter De La Mare, Rudyard Kipling, John Masefield, Alice Meynell, Henry Newbolt, Francis Thompson, William Watson, W. B. Yeats.

(b) Canadian Poets. Text: *The Oxford Book of Canadian Verse*. Special attention will be paid to the selections from the following: Charles Sangster, Charles Mair, Isabella Crawford, W. H. Drummond, Charles G. D. Roberts, Wilfred Campbell, Bliss Carman, Archibald Lampman, Duncan C. Scott, Pauline Johnson. Additional readings in the authors named may be assigned by the instructor. Reference: *A History of English Canadian Literature to Confederation*, by Ray Palmer Baker (Harvard University Press). One hour a week. *Assistant Professor Allison.*

Senior Matriculation: Courses 1, 2, 3, 4, or 9, 10, 11, 12.

First Year, Arts: Courses 9, 10, 11, 12.

First Year, Pharmacy: Courses 1, 2, 3, 4.

First Year, Science: Courses 1, 2, 3, 4.

First Year, Engineering: Courses 5, 6, 7, 8.

Second Year, Arts: Courses 13, 14, 15, 16.

Third Year, Arts (Major): Courses 17, 18, 19, 20, 21, 22.

(Minor): Courses 19, 21, 22.

(General): Courses 19, 22.

Fourth Year, Arts (Major): Courses 23, 24, 25, 26, 27, 28, or 23, 24, 25, 26, 29, 30, 31, 32.

(Minor): Courses 25, 24, 29, 30.

(General): Courses 25, 26.

DEPARTMENT OF FRENCH

W. F. Osborne, M.A.	Professor
F. C. Green, M.A., Ph.D.	Assistant Professor
Celine A. Ballu, B.A.	Lecturer
A. Marie Haynaud, B.A.	Lecturer

N.B.—For key to system of numbering courses, see page 4.

1, 2. Grammar, Composition and Oral Work. This latter will include an elementary study of phonetics, conversation and dictation. First Term: *Elementary French Grammar*, by E. W. Olmsted (Holt & Co.), to end of Lesson XIX. Second Term: Same text as in First Term, from Lesson XX to end. To provide material for conversation, and for the sake of its content, students will furnish themselves with *Lavis: Histoire de France* (Heath). Two hours a week.

3, 4. French Authors. First Term: *French Short Stories* (ed. by Buffum, pub. by Henry Holt), pp. 3-156. Second Term: Same text, pp. 157-299, and Legouv   et Labiche: *La Cigale chez les Fourmis* (Ginn & Co.).

Students are advised to use Cassell's English-French and French-English Dictionary. Two hours a week.

5, 6. Senior Matriculation and B.Sc. French. First Term: French Short Stories (ed. by Buffum, pub. by Henry Holt), pp. 3-156. Second Term: Same text, pp. 157-299, and Legouv   et Labiche: *La Cigale chez les Fourmis* (Ginn & Co.). Two hours a week.

In both terms one hour a week will be given in the case of these classes to practical exercises in grammar, dictation, reading aloud and conversation. Special emphasis will be laid on the study of verbs.

7, 8. French Authors. First Term: Corneille, Horace (ed. by Matzke and pub. by Heath). Second Term: Victor Hugo, *Quatre-vingt-treize* (ed. by Fontaine and pub. by Heath). The student will use Cassell's English-French and French-English Dictionary. One hour a week.

9, 10. General Survey of French Literature. First Term: *Histoire de la Litt  rature fran  aise*, by Rene Doumic (Librairie Paul Delaplane, Paris). The 17th Century Period. Second Term: Same text, the 18th and 19th Centuries. One hour a week.

11, 12. Conversation and Original Composition in French. One hour a week each term. Allen and Schoell's "French Life" (Henry Holt).

13, 14. Translation from English into French. One hour a week each term. First term—Grandgent's French Composition (Heath), Part III. Second Term: Grandgent as above, Part IV.

15. History of French Literature, Seventeenth Century. Ch.-M. Des Granges, *Histoire de la Litt  rature fran  aise* (Librairie Hatier, Paris, 18th edition), pages 299-428. One hour a week.

In order to give the student direct contact with seventeenth century documents not covered in courses 17 and 18, there is prescribed as an integral part of Courses 15 and 16 all of "Seventeenth Century French Reading" (ed. by Schinz and King, pub. by Holt) except authors contained in Courses 17 and 18.

16. Course 15 continued. Des Granges, pages 429-586, Schinz and King, as above. One hour a week.

17. French Masterpieces of the Seventeenth Century. Corneille, *Polyeucte* (ed. by Henning and pub. by Ginn & Co.); Pascal, *Les Pens  es* (in selections from Pascal, ed. by Warren, pub. by Heath); Bossuet, *Oraisons Fun  bres de Henriette de France, Henriette d'Angleterre, et de Cond  * (edited by Rebelliant). La Bruy  re, *Des Femmes, du C  ur, de la Soci  t   et de la Conversation, des Biens de Fortune, de la Cour, des Grands* (edition of *Les Caract  res*, ed. by Warren, pub. by Heath). Three hours a week.

18. French Masterpieces of the Seventeenth Century. Madame de la Fayette, *La Princesse de Cl  ves* (Ginn & Co.); Racine, *Iphig  nie* (ed. by Woodward, pub. by American Book Co.); Moli  re, *Les Pr  cieuses Ridicules* (Heath), *Le M  decin Malgr   Lui* (Heath), *Le Misanthrope* (Heath); La Fontaine, *Fables*, pages 128-162, in *Seventeenth Century French Reading*, Schinz and King (Holt); Boileau, *L'Art Po  tique* (in selections from Boileau, pub. by Heath).

19, 20. Progressive Exercises in Original Composition in French. One hour a week.

21. Translation from English into French. Cameron's *Elements of French Composition*, Part II (Henry Holt). One hour a week.

22. Translation from English into French. Cameron's *Elements of French Composition*, Part III (Henry Holt). One hour a week.

23, 24. **French Conversation.** This section of the work will represent fifty marks for the year. One hour a week.

25. **History of French Literature, Eighteenth Century.** Ch.-M. Des Granges, *Histoire de la Littérature française* (Librairie Hatier, Paris 18th edition), pages 587-729. One hour a week.

26. **History of French Literature, Nineteenth Century.** Ch.-M. Des Granges, as in Course 25, pages 730 to 939. One hour a week.

27. **French Masterpieces of the Eighteenth Century.** Montesquieu, *Letters* 1-75 inclusive in the edition of *Lettres Persones*, edited by Cru (Oxford University Press, Toronto); Voltaire, *Zadig*, ed. by Babbitt (Heath); Diderot, selections ed. by Giese (Heath); Rousseau, selections from edition by Rocheblave, *Pages choisies des grands Ecrivains* (Librairie Armand Colin, Paris); Sedaine, *Le Philosophe sans le Savoir*, ed. by Oliver (Oxford University Press, Toronto); Le Sage, *Turcaret*, ed. by Kerr (Heath); Marivaux, *Le Jeu de l'Amour et du Hasard*, ed. by Fortier (Heath); Beaumarchais, *Le Barbier de Séville*, ed. by Spiers (Heath). Three hours a week.

28. **French Masterpieces of the Nineteenth Century.** Chateaubriand, *Atala*, edited by Kuhns (Heath); Lamartine, *Selections from Premières Meditations Poétiques*, edited by Curme (Heath); Victor Hugo, *Ruy Blas*, ed. by McKenzie (Holt), and pages 3-107, in selected Poems by Victor Hugo, edited by Schinz (Heath); Alfred de Musset, *Selection from the Poetry of Alfred de Musset*, edited by Kuhns (Ginn); Balzac, *Adieu, in Cinq Scènes de la Comédie Humaine*, edited by Wells (Heath). René Bazin; *Le Blé qui lève*, edited by Neff (Holt). Of the marks assigned for examination on this section about 30 per cent. will be given to translation, the balance of the marks will represent critical work. Three hours a week.

29, 30. **Progressive Exercises in Original Composition in French.** One hour a week.

31, 32. **Translation from English into French.** French Composition, by G. W. F. Goodridge (Oxford University Press, Toronto). One hour a week.

33, 34. **French Conversation.** This section of the work will represent not less than fifty marks for the year. One hour a week.

Senior Matriculation:

Courses 5, 6.

First Year, Science:

Courses 5, 6.

First Year, Arts:

Courses 1, 2, 3, 4.

First Year, Pharmacy (Degree Course)

Courses 5, 6.

Second Year, Arts:

Courses 7, 8, 9, 10, 11, 12, 13, 14.

Third Year, Arts (Major):

15, 16, 17, 18, 19, 20, 21, 22, 23, 24.

(Minor): Courses 17, 18, 23, 24.

(General): Courses 17, 18.

Fourth Year, Arts

(Major): Courses 25, 26, 27, 28, 29, 30, 31, 32, 33, 34.

(Minor): Courses 27, 28, 33, 34.

(General): Courses 27, 28.

DEPARTMENT OF GERMAN

J. H. Heinzelmann, B.A., Ph.D. *Professor*

N.B.—For key to system of numbering courses, see page 4.

1, 2. **Elementary German.** The course is offered for those who enter the University without German. For the first term the work will cover Keyser and Montaser's *Foundations of German* (Amer. Book Co.), pages 1-65, and Martini's *First German Reader* (Ginn), pages 1-41. For the second term the work in the Grammar will extend to p. 164 and in the Reader to p. 80. Four hours a week.

3, 4. **First Year Authors.** The reading for the first term will consist of Storm's *Immensee* (Holt), Minckwitz and Unwerth's *Edelsteine* (Ginn) and Hatfield's *Shorter German Poems* (Heath), Part I. Poems 2, 8, 10, 11, 18 and 20 to be memorized.

During the second term the reading will be Heyse's *L'Arrabbiata* (Heath), Gerstacker's *Germelshausen* (Ginn), Solomon's *Geschichte einer Geige* (Heath), and *Shorter German Poems*, Part II. Poems 27, 29, 31 and 35 are to be memorized.

5, 6. **First Year Oral and Written Composition.** Easy German Conversation by Allen and Phillipson (Holt). For the first term, pages 1-37 and 97-109. The student is further required to write a number of very brief essays based upon the reading in the authors.

During the second term the work will cover pages 39-93 and 109-126, with additional essays in connection with the reading.

7, 8. **Second Year Authors.** For the first term the reading will consist of Bender, *German Short Stories*, pages 1-129, and Selections from Dillard's *Aus dem deutschen Dichterwald* (Amer. Book Co.).

For the second term the reading will cover pages 130-215 in *German Short Stories* and Ernst's *Flachsmann als Erzieher* (Ginn), with Selections from *Aus dem deutschen Dichterwald*.

9, 10. **German Composition.** For the first term, Carrington and Holzwarth's *German Composition*, Part 1. The student is further required to write a number of short essays on the material covered in the authors.

For the second term, Part II of *German Composition* with additional essays based on the authors.

11. **The German Short Story.** Its history and technique in the nineteenth century. Eichendorff, *Aus dem Leben eines Taugenichts* (Heath); Storm, *In St. Jürgen* (Ginn); Heyse, *Vetter Gabriel* (Holt); Keller, *Romeo und Julia auf dem Dorfe* (Holt); Rosegger, *Das Holzknechthaus* (Oxford Press); Meyer, *Gustav Adolfs Page* (Heath); Schnitzler, *Lieutenant Gustl* (German edition). Two hours per week. (Not to be given in 1921-1922.)

12. **History of German Literature to 1800.** Lectures on the main currents of German literature in its earlier periods, illustrated by the reading of selections of some of the more important masterpieces.

13. **Schiller.** The author's life and the critical reading of *Kabale und Liebe* (Holt), *Wallensteins Tod* (Heath), *Wilhelm Tell* (Holt), and *Poems* (Holt). Two hours per week.

14. **The German Novel.** Lectures on its history will accompany the reading of typical examples. Two hours per week. (Not given in 1921-22.)

15, 16. **Composition.** One hour per week.

17. **Lessing.** A study of the life and time of Lessing will accompany the reading of *Minna von Barnhelm* (Holt), *Emilia Galotti* (Heath), and *Nathan der Weise* (Ginn). Three hours per week.

18. **The Modern German Drama.** A study of the development of the German drama in the nineteenth century, with some consideration of related movements in other European countries. About twenty representative dramas will be read and discussed. Four hours per week. (Not given in 1921-1922.)

19. **The Romantic School.** Lectures on the history of German literature from 1800 to 1850, with collateral readings and reports. Four hours per week. (Not given in 1921-1922.)

20. Goethe. A detailed study of his life and literary development, together with the reading of the following: Poems (Holt), Götz von Berlichingen (Ginn), Werther (Oxford Press), Faust, Part I. (Heath), Iphigenie (Ginn). Four hours per week.

21. Modern Germany. Its geography and the more important questions relating to its historical, educational, social and artistic development during the nineteenth century. Two hours per week. (Not given in 1921-22.)

Senior Matriculation:	Courses 1, 2, or 3, 4, 5, 6.
First Year, Science:	Courses 1, 2, or 3, 4, 5, 6.
First Year, Arts:	Courses 1, 2, or 3, 4, 5, 6.
First Year, Pharmacy (Degree Course)	Courses 1, 2, or 3, 4, 5, 6.
Second Year, Arts:	Courses 7, 8, 9, 10.
Third Year, Arts:	(Major): Courses 12, 13, 15, 16, 17, 20. (Minor): Courses 15, 17, 20.
Fourth Year, Arts:	(Major): Courses 12, 13, 15, 16, 17, 20. (Minor): Courses 15, 17, 20. (General): Courses 12, 17.

ICELANDIC

Instruction in Icelandic is provided only in Wesley College.

N.B.—For key to system of numbering courses, see page 4.

1, 2. **Grammar.** Finnur Jónsson, Málfræði. First term, pp. 54-85. Second term, pp. 85-142. One hour a week.

3, 4. **Authors.** Laxdaela Saga. First term, cc. 1-39 (pp. 1-116). Second term, cc. 40-88, (pp. 117-266). Three hours a week.

5, 7. **Authors.** With grammar in conjunction. (a) Gunnlaugs Saga Ormstungu. (b) Sæmundar Edda (F. Jónsson), pp. 87-107. Four hours a week.

6, 8. **Authors.** With grammar in conjunction. (a) Sæmundar Edda (F. Jónsson), pp. 1-58, 137-160, 169-173. (b) History of Icelandic Literature (F. Jónsson), pp. 63-91. Four hours a week.

First Year, Arts: Courses 1, 2, 3, 4.

Second Year, Arts: Courses 5, 6, 7, 8.

PHILOSOPHY (ENGLISH)

Henry W. Wright, B.A., Ph.D. *Professor*

Rupert C. Lodge, M.A. (Oxon) *Professor*

N.B.—For key to system of numbering courses, see page 4.

1, 2. **Psychology.** Pillsbury's Essentials of Psychology. James's Briefer Course, Chapters X-XVIII. Two hours a week. *Professor Lodge.*

1a, 2a. **Logic.** Lodge's Introduction to Modern Logic. First Term: Parts I and II (Judgment and Inference). Second Term: Part III. (Scientific Method). Two hours a week. *Professor Lodge.*

1b, 2b. **Ethics.** Wright's Self-Realization. Two hours a week. *Professor Wright.*

3, 4. Social Philosophy. First Term: Hobhouse's *Morals in Evolution*. Second Term: MacDougall's *Social Psychology and Group Mind*. Four hours a week. *Professor Wright*.

5, 6. History of Philosophy (Ancient and Medieval). Bakewell, *Sourcebook in Ancient Philosophy*; Plato, *Republic* (omitting Books VIII-IX); St. Augustine and St. Thomas Aquinas, *Selections*; Roger's *Student's History of Philosophy to end of Medieval Period*. First Term: To end of Plato. Second Term: Aristotle to end of Medieval Period. Four hours a week. *Professor Lodge*.

7, 8. History of Philosophy (Modern). Rand, *Modern Classical Philosophers*, Russell, Bradley, James, Varisco, etc., *selections*; Roger's *Student's History of Philosophy*. First Term: Bruno to Kant, inclusive. Second Term: Fichte to present day, inclusive. Four hours a week. *Professor Lodge*.

9, 10. Philosophy of Religion. First Term: Coe's *Psychology of Religion*. Second Term: Wright's *Faith Justified by Progress*. Two hours a week. *Professor Wright*.

11, 12. Problems of Philosophy. Perry's *Present Tendencies in Philosophy*, with assigned readings. Two hours a week. *Professor Wright*.

13, 14. Philosophy of Plato. *Dialogues*, translated and edited by Jowett (all except *Laws*), Zeller, Plato. Four hours a week.

15, 16. Philosophy of Locke. Locke's *Essay on the Human Understanding* (Fraser's Edition); Locke's *Conduct of the Understanding*; J. Gibson, Locke's *Theory of Knowledge*. Four hours a week.

17, 18. Philosophy of Kant. Watson, *Selections from Kant*, with assigned readings; Watson, *Kant's Philosophy Explained*. Four hours a week.

19, 20. Philosophy of Berkeley and Hume. Berkeley, *Principles of Human Knowledge*, and *Three Dialogues between Hylas and Philonous* (edited by Fraser), A. C. Fraser, Berkeley; Hume, *Enquiry concerning the Human Understanding*. Four hours a week.

21, 22. History of Ethics. Sidgwick's *Outline of History of Ethics*. Rand's *Classical Moralists*. Four hours a week.

23, 24. Systematic Ethics. Rashdall's *Theory of Good and Evil*. Dewey and Tufts *Ethics*. Four hours a week.

25, 26. Metaphysics. Taylor's *Elements of Metaphysics*. Bradley's *Appearance and Reality*. Two hours a week.

27, 28. Philosophy of Religion. Galloway's *Philosophy of Religion*. Two hours a week.

GRADUATE COURSES

29, 30. Seminar in Logic and the History of Philosophy. Two hours a week. *Professor Lodge*.

31, 32. Seminar in Ethics and Metaphysics. Two hours a week. *Professor Wright*.

Second Year, Arts (1921-1922): Courses 1, 2; 1b, 2b.

(1922-1923): Courses 1, 2; 1a, 2a.

Third Year, Arts: General: Course 3, or 5.

Minor: Course 5, 6.

Major: Courses 3, 4 and 5, 6.

Full Course: Courses 3, 4, 5, 6, and 15, 16, 21, 22.

Fourth Year, Arts: General: Course 7 or 9, 10.

Minor: Course 9, 10 and 11, 12.

Major: Courses 7, 8, 9, 10, 11, 12.

Full Course: 17, 18 or 19, 20, and 23, 24 or 25, 26, 27, 28.

PHILOSOPHY (LATIN)

(Instruction in Latin Philosophy is provided only in St. Boniface College)

N.B.—For key to system of numbering courses, see page 4.

1. **Logica.** Russo.

3, 4. **Metaphysica.** Russo. (a) Ontologia; Cosmologia; (b) Anthropologia, Theologia Naturalis.

5, 6. **Monsabré.** Conférences (1875).

7. **Evolution.** Gerard. The Old Riddle and Newest Answer.

8. **Psychology.** Maher.

9 10. **Histoire de la Philosophie.** Vallet, Histoire de la Philosophie pages 1-310. Premier terme—Philosophie orientale grecque, romaine, alexandrine, philosophie des Pères; second terme—Philosophie scolastique, philosophie de la Renaissance. Deux heures par semaine.

9a, 10a. **History of Philosophy.** Turner, History of Philosophy, pages 1-323. First term—Oriental, pre-Socratic, Socratic and Aristotelian philosophy; second term—Post-Aristotelian, Graeco-Oriental, Patristic and Scholastic philosophy. Two hours a week.

11, 12. **Philosophia Moralis.** (a) Jouin, Generalia Morum Principia, Actus Humani, Lex Naturalis, Hominis Officia et Jura, Jus Proprietatis, Jus Sociale, Societas Domestica, Societas Civilis. Sept heures par semaine. (b) Lacordaire, Conférences de Notre-Dame, Economie Providentielle de la Réparation; Félix, Le Progrès par le Christianisme. Deux heures par semaine. (1922-23).

11a, 12a. **Philosophie Moralis.** (a) Lortie, Generalia Morum Principia, Actus Humani, Lex Naturalis, Hominis Officia et Jura, Jus Proprietatis Jus Sociale Societas Domestica Societas Civilis. Seven hours a week. (b) Rickaby Ethics and Natural Law The Family, The State; Leo XIII. Social Problems (Condition of the Working Classes, Christian Constitution of States, Duties of Christians as Citizens, Christian Marriage). Two hours a week. (1922-23.)

13 14. **Histoire de la Philosophie.** Vallet, Histoire de la Philosophie pages 415-546. Premier terme—Philosophie moderne du dix-septième siècle; second terme—Philosophie moderne du dix-huitième et du dix-neuvième siècle. Deux heures par semaine. (1922-23.)

13a, 14a. **History of Philosophy.** Turner History of Philosophy, pages 324-660. First term—Third period of Scholastic Philosophy, Modern Philosophy to Kant; second term—Modern Philosophy from Kant to our time, German, Scottish, English, French, Italian and American Philosophy. Two hours a week. (1922-23.)

15, 16. **Economie Politique.** Premier terme—Hervé-Bazin Economie Politique (Production, Echange, Répartition, Consommation); second terme, Cathrein, Socialisme (sa Nature, Vices Radicaux, Impossibilité Pratique, Objections). Trois heures par semaine. (1922-23.)

15a, 16a. **Political Economy.** First term—Burke, Political Economy (Production, Exchange, Money, Banking, Trade, Consumption); second term—Cathrein-Gettelmann, Socialism (its Nature, Development, Fundamental Tenets, Impracticability). Three hours a week. (1922-23.)

17 18. **Physique.** Notions de mécanique, hydrostatique, pesanteur, chaleur, acoustique, optique, électricité et magnétisme. Quatre heures par semaine.

17a, 18a **Physics.** Statics, hydrostatics, heat, sound, light, electricity and magnetism. Four hours a week.

19. 20. General Physics (Practical). The students perform a series of experiments to illustrate the theoretical principles studied in the lectures. Two hours a week.

22. Astronomie Elementaire. La terre et ses mouvements, le soleil, la lune, les planètes, les comètes, les étoiles, les nébuleuses, coordonnées célestes, hypothèses cosmogoniques. Deux heures par semaine.

22a. Elementary Astronomy. The earth and its motions, the sun, the moon, the planets, comets, stars and nebulae, celestial coordinates, cosmogonic hypotheses. Two hours a week.

23, 24. Botany. Division of Sciences. Comparison of living and non-living beings; differences between animals and plants, plants and minerals. Classification of plants, cells, tissues, seeds, roots, stems; primary and secondary Growth. Buds, Leaves Flowers Fruits. Types of Cryptogams. Two hours a week.

Text Book: Bergen, Elements of Botany.

25, 26. Laboratory Course in General Botany. Two hours a week.

27, 28. Chimie. Chimie élémentaire. Principes élémentaires de la chimie; éléments et composés; lois des combinaisons; atomes et molécules; acides, bases, sels; propriétés des éléments les plus connus et de leurs principaux composés; principes de l'analyse chimique des sels; introduction à la chimie organique. Six heures par semaine avec travail de laboratoire. (1922-23.)

27a, 28a. Chemistry. Fundamental principles of chemistry; elements and compounds; laws of combination; atoms and molecules; acids, bases, salts; properties of some common elements and their more important compounds; principles of the analysis of simple salts; introduction to organic chemistry. Six hours per week with laboratory work. (1922-23.)

29, 30. Practical Chemistry. Experiments illustrating general principles and the preparation and properties of substances studied in lectures. One period of three hours per week. (1922-23.)

31. Zoology. General principles of Zoology. An introduction to Anatomy, Histology, Cytology and Physiology of Animals. The Frog: Skeletal System, Muscular System, Alimentary System, Respiratory System, Circulatory System, Urinogenital System, Nervous System and Sense-organs. Protozoa, Coelenterata, Coelomata invertebrata. Two hours a week. (1922-23.)

32. Practical Zoology. A course of laboratory work to accompany the foregoing, providing an introduction to zoological methods. Two hours a week. (1922-23.)

Text Books: Marshall, "The Frog." O'Donoghue, "An Introduction to Zoology."

33. Human Anatomy and Physiology. Skeleton, Bones, Tissues, Respiration, Nutrition, Digestion, Circulation, Excretion, Nervous system and Sense-organs. Two hours a week. (1922-23.)

Text Book: Martin, "Human Body."

Third and Fourth Year, Arts: Latin Philosophy (French-Speaking students): Courses 1; 3, 4; 5, 6; 9, 10; 17, 18; 19, 20; 22; 23, 24; 25, 26.

Third and Fourth Year, Arts: Latin Philosophy (English-speaking students): Courses 1; 3, 4; 7, 8; 9a, 10a; 17a, 18a; 19, 20; 22a; 23, 24; 25, 26.

Students in St. Boniface College proceeding to the Course in Latin Philosophy above will take the following course in the First and Second Years:

COURS DE PHILOSOPHIE LATINE

(*Pour les élèves de langue française*)

Tous les sujets sont fixes; il n'y a pas de sujets facultatifs.

PREMIERE ANNÉE

Français

Préceptes Littéraires. Verest, Manuel de Littérature. Premier terme—Notions de psychologie littéraire, pages 19-53; Description, Narration, Critique littéraire, pages 238-303; Les genres littéraires, pages 303-340. Second terme—Notions d'Esthétique et la Poésie, pages 340-440; genres intermédiaires, pages 497-514.

Histoire de la Littérature et Modèles français. Premier terme—Mouchard, Histoire de la Littérature, Première et Deuxième Partie, pages 1-193; Procès, Morceaux choisis; Molière, Les Femmes savantes. Second terme—Mouchard, Deuxième et Troisième Partie, pages 193-378, moins les chapitres V et VIII de la 3e Partie.

Auteurs. Procès, Morceaux choisis, Extraits des principaux écrivains du XVIIe, XVIIIe et XIXe siècle; Corneille, Polyeucte; Racine, Athalie.

Latin

Grammaire et Thèmes latins. Revue générale de la grammaire et de la prosodie latine. Ragon, Exercices latins sur la syntaxe, Versions latines.

Auteurs. Premier terme—Horace, Odes, Epodes choisies; Cicéron, Pro Ligario; Virgile, Enéide, chant IIe. Second terme—Virgile, Enéide, Chant IIe, seconde moitié; Cicéron, Pro Archia.

Grec

Grammaire et Thèmes grecs. Revue de la morphologie et de la syntaxe. Ragon, Thèmes grecs, Versions grecques.

Auteurs. Premier terme—Démosthène, 1ère Olynthienne; Homère, Iliade, Chant I, 1ère partie; Platon, Criton. Second terme—Homère, Iliade Chant I, 2e partie; Platon, Criton, la fin.

Anglais

Grammaire. Dulac et Bonnet, Grammaire anglaise—Étude des particules, prépositions, conjonctions, interjections. Premier Terme—pp. 285-356. Second Terme—p. 356 à la fin.

Auteurs. Premier Terme—Macaulay, Warren Hastings. Second Terme—Newman, Saul, Early Days of David, The Tartar and the Turk, The Turk and the Saracen, The Past and the Present of the Ottoman.

Mathématiques

Algèbre. Hall and Knight, Elementary Algebra, chapitres 32 à 39.

Trigonométrie. Playne and Fawdry.

Histoire

Saltet, Histoire Universelle.

SECONDE ANNÉE

Français

Préceptes Littéraires et Exercices. Verest, Manuel de Littérature. Premier terme: L'Art dramatique, Éloquence, première partie; le Débit. Second Terme: Éloquence, deuxième partie; les Genres intermédiaires.

Histoire de la Littérature et Auteurs. Premier Terme: Mouchard, Histoire de la Littérature française, IIIe partie, ch. V, VIII, XI et XII; IVe partie. Procès, Modèles Français, Tomes III et IV, extraits de Lesage, Bernardin de Saint-Pierre et André Chénier; Racine, Britannicus. Second terme: Mouchard, Histoire de la Littérature française, Ve partie; Procès, Modèles Français, Tomes III et IV: extraits des modernes: V. Hugo, de Musset, de Vigny, Leconte de Lisle, Veuillot, etc; orateurs: Bossuet, Bourdaloue, Berryer, Montalembert, de Mun.

Latin.

Thèmes latins et Versions. Mouchard, Thèmes latins. Ragon, Cent-vingt versions latines.

Auteurs. Premier terme: Cicéron, Pro Murena, Ière partie. Horace, Epîtres. Second terme: Cicéron, Pro Murena, IIe partie; Horace, Satires.

Grec.

Thèmes grecs et Versions. Ragon, Thèmes grecs. Ragon, Deux-cents versions grecques.

Auteurs. Premier terme: Démosthène, Ière Philippique. Euripide, Médée, Ière partie. Second terme: Démosthène, IIe Philippique. Euripide, Médée, IIe partie.

Anglais.

Grammaire et Exercices de Thème et Version: Havet, L'Anglais enseigné aux Français. Premier terme: III, Ière partie. Second terme: III, IIe partie.

Auteurs. Premier terme: Macaulay, History of England (morceaux choisis). Second terme: Newman, What is a University?, University Life, Athens, The Schoolmen, The Strength and Weakness of a University, The Second Spring.

Histoire

Desrosiers et Bertrand, Histoire du Canada.

Mathématiques

Géométrie Analytique. La ligne droite, le cercle, la parabole, l'ellipse, l'hyperbole. Crawley and Evans' Analytical Geometry (University of Pennsylvania, Philadelphia), jusqu'à la page 106.

LATIN PHILOSOPHY COURSE

(For English-speaking Students)

All the subjects are required.

FIRST YEAR

English

Composition and Rhetoric. Composition—the writing of at least four original compositions during each term with an aggregate of at least 2,000 words for each term. Coppens, Introduction to English Rhetoric,—Literary aesthetics, theory of the beautiful, taste, imagination, theory of literature, poetics, nature and kinds of poetry, lyric and epic poetry, fiction, realism and romanticism in fiction, development of the English novel. First term—pages 1-150. Second term—pages 151-314. Text: Macaulay, Essay on Lord Clive.

English Literature. Texts: History of English Literature, by W. J. Long (Ginn); Principles and Progress of Poetry, by Gayley and Young (Macmillan).

(1) First term: (a) History—Chapters VII-IX. (b) Prose—Bunyan's Pilgrim's Progress, Part I; Addison and Steele's The De Coverley Papers. (King's Treasuries, Dent.). (c) Poetry—Milton's L'Allegro, Il Penseroso, Lycidas; Dryden's Alexander's Feast; Pope's Rape of the Lock; Gray's Elegy in a Country Churchyard; Goldsmith's Deserted Village; Burns's Tam o' Shanter; The Cotter's Saturday Night.

(2) Second term: (a) History—Chapters X-XI. (b) Prose—Lamb's Essays of Elia; Ruskin's Sesame and Lilies (King's Treasuries, Dent). (c) Poetry—Wordsworth's Tintern Abbey, Ode to Duty, London, 1802, Composed upon Westminster Bridge, "It is a beauteous evening," "The World is too Much With Us," "Scorn not the Sonnet;" Coleridge's Ancient Mariner; Byron's Prisoner of Chillon, Sonnet—On Chillon, Stanzas from Childe Harold; Shelley's Ode to the West Wind, To a Skylark; Keats's Ode to a Nightingale, On First Looking into Chapman's Homer, On the Grasshopper and the Cricket; La Belle Dame Sans Merci; Tennyson's Oenone, The Lady of Shalott, Ulysses; Browning's Home Thoughts from Abroad, Home Thoughts from the Sea, Evelyn Hope, My Last Duchess, Andrea del Sarto; Arnold's Rugby Chapel, Dover Beach.

Latin

Composition and Sight Translation. Bradley-Arnold Latin Composition. First term, Exercises 1-15; second term, Exercises 16-32. Sight translation based on the authors read.

Authors. First term—Cicero, Pro Ligario; Horace, Odes (selected); Virgil, Aeneid II (first part). Second term—Cicero, Pro Archia; Horace, Epodes (selected); Virgil, Aeneid II (second part).

Greek

Composition and Sight Translation. Pitman's Greek Prose Composition. First term—Exercises 13-29. Second term—Exercises 30-44. Sight translation based on the authors read.

Authors. First term—Demosthenes, First Olynthiac; Plato, Crito (first part); Homer, Iliad I (first part). Second term—Plato, Crito (second part); Homer, Iliad I (second part).

French

Grammar, Composition and Sight Translation. First term—Fraser and Squair, High School French Grammar (to page 277); Composition; Sight Translation. Second term—Fraser and Squair, High School French Grammar (page 278 to end); Lazare, Elementary French Composition; Sight Translation; Dictation.

Authors. First term—La Bruyère, Les Caractères. Second term—Le Bourgeois Gentilhomme.

Mathematics

Algebra. Hall and Knight, Elementary Algebra, Chapters 32 to 39.
Trigonometry. Playne and Fawdry.

History

Francis, S. Betten, S. J. Modern World, Vol. I.

SECOND YEAR

English.

Composition and Rhetoric. Composition—the writing of at least two original compositions during each term with an aggregate of at least 1,500 words for each term. Coppens, Introduction to English Rhetoric, Part II., Art of Oratorical Composition—Oratory, nature and types of oratory, division of the oration, style in public speaking, methods of oratorical composition, principles of argumentation. First term—pages 1-140. Second term—pages 141-307. Text: Newman, Second Spring.

English Literature. (1) First Term: (a) Tennyson's Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur; Keats's St. Agnes Eve; Lowell's The Vision of Sir Launfal; Scott's Marmion (Gayley and Young); Arnold's Sohrab and Rustum. (b) Scott's Quentin Durward; Hardy's Far from the Madding Crowd.

(2) Second Term: (a) Chaucer's Prologue to the Canterbury Tales (Gayley and Young). (b) Shakespeare's Romeo and Juliet; Coriolanus.

Note.—These Courses include a knowledge of the life and times of the authors read, from Long's History of English Literature and other sources.

Latin.

Composition and Sight Translation. Bradley-Arnold Latin Prose Composition. First Term: Exercises 41-55, omitting 43, 44, 47, 48 and 51. Second Term: A continuation of this Course. Exercises 56-65, omitting 62.

Authors and Sight Translation. First Term: Cicero, Pro Murena (1st part); Horace, Epistles. Second Term: Cicero, Pro Murena (2nd part); Horace, Satires. Sight Translation based on the authors read.

Greek.

Composition. Pitman's Continuous Proses.

Authors and Sight Translation. First Term: Demosthenes, Philippic I; Euripides, Medea (1st part). Second Term: Demosthenes, Philippic II; Euripides, Medea (2nd part). Sight Translation based on the prose author read.

French.

Grammar and Composition. Text: Fraser and Squair, French Grammar and Reader. First Term: Page 220-262. Exercises. Second Term: Pages 262-the end. Exercises. One hour a week.

Authors. First Term: Selections from Bossuet. Second Term: Racine's Athalie.

Mathematics.

Analytical Geometry. The analytical geometry of the straight line, circle, parabola, ellipse and hyperbola. Crawley and Evans' Analytical Geometry to page 106.

History.

Francis S. Betten, S. J., Modern World, Vol. II.

DEPARTMENT OF HISTORY

Chester Martin, M.A., B.Litt.....	Professor
Daniel Harvey, M.A.....	Assistant Professor
Joseph E. Howe, B.A. (Yale), M.A.....	Lecturer

N.B.—For key to system of numbering courses, see page 4.

1. Ancient History. A. J. Grant, A History of Europe (Longmans), Part I., supplemented by lectures and class work.

2. Mediaeval History. A. J. Grant, A History of Europe (Longmans), Part II., supplemented by lectures and class work.

For Courses 1 and 2 students are advised to use the historical atlases in Everyman's Library—Classical History and European History.

3, 4. Modern History. Modern History, 1400-1648, and 1648 to the present time. An elementary text such as Adams' Mediaeval and Modern European History, pp. 157-458, will be supplemented by readings from the Rivington Series, etc. Extra-mural students are required, and intra-mural students are advised, to read Robinson's History of Western Europe, Vol. 2. Two lectures and one essay period per week.

9, 10. Development of British Political Institutions. A survey of British and Dominion History chiefly from the constitutional point of view.

The documentary groundwork of the course will be found in Stubbs's *Select Charters*, Prothero's *Select Statutes and other Constitutional Documents*, Gardiner's *Constitutional Documents of the Puritan Revolution*, Egerton's *Federations and Unions in the British Empire*, etc.

Emphasis during the second term will be placed upon the conflict against the Stuarts; the development of the parliamentary party and the cabinet; the practice of responsible government; the system of colonial administration and government; the American Revolution and responsible government in Canada and Nova Scotia; the American and Canadian Confederation, with subsequent confederations in the British Dominions. Three lectures and one essay period per week.

11, 12. British History and Expansion from 1485. These courses with 9 and 10 make up the Third Year Major Course. Emphasis, increasing through the course, will be placed on the growth of the British Empire and in addition to a text such as J. R. Green's Short History, students should possess and know J. R. Seeley, Expansion of England, and Egerton, Origin and Growth of British Colonies. For essay work and special topics students will be referred to the works of Gardiner, Firth, Macaulay, Lesky, Spencer Walpole and the biographies of Cromwell (C. H. Firth), Chatham (B. Williams), Pitt (J. Holland Rose), Gladstone (Lord Morley), Cobden (Lord Morley), Bright (G. M. Trevelyan), as well as to the more accessible books such as G. M. Trevelyan, England under the Stuarts; C. Grant Robertson, England under the Hanoverians; Marriott, England in the Nineteenth Century. Similarly for British Expansion in addition to the works of Durham and Gibben Wakefield, reference will be made to works such as those of Beer, Egerton, Lucas, Pollard (The British Empire), and others. Three hours per week.

13, 14. European History, 1789 to Present Time. The aim of this course is to provide an historical background to present day National and International problems. A study will be made of the outstanding characters, tendencies, movements and events of the period, among which the following may be indicated: The French Revolution, Napoleon, The Congress of Vienna, The Holy Alliance and the Concert of Europe, Metternich and the Reaction after 1815, The War of Greek Independence, The Revolution of 1830 and the Separation of Belgium from Holland, The Revolution of 1848, The Second Empire in France, The Crimean War and the Eastern Question, Reform and Reaction in Russia, The Prussianization of Germany, The Dual Monarchy of Austria-Hungary, The Union of Italy, The Franco-Prussian War and the Establishment of the German Empire, The Balkan Nationalities and the Russo-Turkish War, The Congress of Berlin, The Expansion of Europe in Asia and Africa, The Triple Alliance and the Triple Entente, The Growth of Internationalism, The Russo-Japanese War, The Turco-Italian War, The Balkan Wars, The War of 1914-18, The League of Nations and the Peace of Versailles.

A general survey of the period may be made from: Rose, *The Revolutionary and Napoleonic Era*; Alison Phillips, *Modern Europe*, or E. Lipson, *Europe in the 19th Century*; Anderson, *Constitutions and Documents for the History of France 1789-1907*; Oakes and Mowat, *The Great European Treaties of the 19th Century*; Robertson and Bartholomew, *A Historical Atlas of Modern Europe*.

Reference will be made for essays and general reading to the following primary and secondary sources among others: *Memoirs of Mme. Remusat*, *Mme. Campan*, *Bourrienne*, *Metternich*, *Talleyrand*, *Bismarck*, *Crispi*; *Rousseau*, *Social Contract*; *Young*, *Travels in France*; *Burke*, *Reflections on the French Revolution*; *Karl Marx*, *Revolution and Reaction in Germany and Austria*; *Cambridge Modern History*; *Lavis* et *Ramnaud*, *Histoire Generale*; *Aulard*, *French Revolution*; *Carlyle*, *French Revolution*; *Acton*, *Lectures on the French Revolution*; *Madelin*, *The French Revolution*; *Fisher*, *Rose*, *Fournier*, *Napoleon I.*; *Coquelle*, *Napoleon and England*; *Seeley*, *Life and Times of Stein*; *Mahan*, *Influence of Sea Power on the French Revolution and Empire*; *Fisher*, *Napoleonic Statesmanship in Germany*; *Dawson*, *The Evolution of Modern Germany and the German Empire 1867-1914*; *Grant Robertson*, *Bismarck*; *Stillman*, *The Union of Italy*; *King*, *A History of Italian Unity*; *Thayer*, *Cavour*; *King*, *Mazzini*; *Trevelyan*, *Garibaldi*; *Fisher*, *Bonapartism*; *Simpson*, *The Rise of Napoleon III.*; *De La Gorce*, *Histoire du Second Empire*; *Seton-Watson*, *Racial Problems in Hungary*; *Forbes*, *History of the Balkans*; *Marriott*, *The Eastern Question in European Diplomacy*; *Rose*, *The Development of European Nations*; *Muir*, *The Expansion of Europe*; *Muir*, *Nationalism and Internationalism*; *Zimmern*, *Nationality and Government*. Four hours a week.

15, 16. Canadian History, 1763-1867.—The following outline will suggest the chief phases to be considered: The period from the cession to the Constitutional Act in some detail; the growth of parties; the War of 1812; the opening of the West; Rebellion in Upper and in Lower Canada; *Durham's Report*; *Responsible Government*; *Confederation*; *Manitoba*. The following will be among the chief books of reference: *Shortt and Doughty*, *Constitutional Documents, 1763-1791*; *Doughty and McArthur*, *Documents, 1791-1818*; *Egerton and Grant*, *Canadian Constitutional Development*; *Oliver*, *The Canadian North-West*, 2 vols.; *Durham's Report*, ed. *Lucas*; *Pope*, *Confederation Documents, Confederation Debates*; *Egerton*, *Canada, 1763-1901*; *Lucas*, *War of 1812*; *Garneau*, *Histoire du Canada*; *Shortt and Doughty* (ed.), *Canada and Its Provinces*, 23 vols.; *Wrong and Langton* (ed.), *Chronicles of Canada Series*; *The Makers of Canada Series*. Three lectures and one essay period per week.

First Year, Arts: Courses 1, 2.

Second Year, Arts: Courses 3, 4.

Third Year, Arts: Major, Courses 9, 10; 11, 12.
Minor, Courses 9, 10.

Fourth Year, Arts: Major, Courses 13, 14; 15, 16.

The periods outlined for the History Majors and Minors of the Third and Fourth Years are covered by formal lectures supplemented by tutorial work with small groups of students. Essays, prepared and discussed twice a week with the instructor in charge, are intended to cover as far as possible the chief problems under consideration.

DEPARTMENT OF POLITICAL ECONOMY AND POLITICAL SCIENCE

Archibald Brown Clark, M.A.....	<i>Professor</i>
Reginald F. Jones, M.A.....	<i>Assistant Professor</i>
Lily A. McCullough, M.A., LL.B.....	<i>Assistant</i>

N.B.—For key to system of numbering courses, see page 4.

1, 2. Economics. The Character and Scope of Political Economy. Methods of Investigation; Economic Laws; Relation of Economic Science to Practice; Leading Principles of Consumption, Production and Distribution of Wealth. Outlines of English Economic History. First Term: Nicholson, "Elements of Political Economy," Introduction and Book I; Ashley, "Economic Organization of England," Chapters 1-4. Second Term: Nicholson, Book II; Ashley, Chapters 5-8. Four hours a week.

3, 4. Economic Theory. A survey of the leading principles of Political Economy, together with the chief landmarks in the history of Economic Theory. A more intensive study of the Theory of Exchange, including Value, Money, Credit, Currency and Banking, Commercial Crises, the Money-Market, the Rate of Interest and the Rate of Discount. First Term: Nicholson, "Elements of Political Economy," Books I and II (revision), Book III, chapters 1-4; Mill, "Principles of Political Economy," Book III, chapters 1-6 and 14-16; L. L. Price, "Political Economy in England," chapters 1-4. Second Term: Nicholson, Book III chapters 5-12; Mill, Book III, chapters 7-13 and 23-24, 26; H. Withers, "The Meaning of Money"; L. L. Price, chapters 5-8. Three hours a week.

5, 6. Foreign and Colonial Trade Policy—History and Theory. The historical development of the Theory of Foreign Trade, with special reference to Adam Smith's Critique of the Mercantile System; the Theory of International Trade and International Values; Free Trade and Protection; the Foreign Exchanges. First Term: Adam Smith, "Wealth of Nations," Book II, chapter 5; Book III, chapter 1; Book IV, chapters 1-2; Nicholson, "A Project of Empire," chapters 1-8, 11; "Elements," Book III, chapter 13, secs. 1-4, chapter 15; Book V, chapter 7; Mill, "Principles," Book III, chapter 17; Book V, chapter 10, sec. 1; Bastable, "Theory of International Trade," chapters 1, 8, 9. Second Term: Adam Smith, Book IV, chapters 3-8; Nicholson, "Project of Empire," chapters 7-16; "Elements," Book III, chapter 13, secs. 5, 6, chapter 14; Book V, chapter 9; Mill, Book III, chapters 18-22, 25; Bastable, chapters 2-7, 10, and appendices; Withers, chapter 10. Two hours a week.

7, 8. Economic History. The chief landmarks in English Economic History in Mediaeval times, and a more detailed study of the Modern period; The Manor; The Gilds; The Black Death and the Peasants' Revolt; Transition from Mediaeval to Modern Economic Conditions; The Elizabethan Regulation of Industry and Commerce; The Poor Law; Foreign Trade Companies; Colonisation and Colonial Policy; Origin and Development of Banking; The Industrial Revolution; Trade Unionism; Factory Legislation; The Free Trade Movement. First Term: Cunningham, "Growth of English Industry and Commerce," vol. II, Part I, pp. 1-402. Second Term: Cunningham, Part I, pp. 403-608, and Part II. Two hours a week.

9, 10. (Minor) Economic Theory. A survey of the leading principles of Economics, together with the chief landmarks in the history

of Economic Theory. A more intensive study of the Theory of Exchange, including Value, Money, Credit, Banking, the Rate of Interest and the Rate of Discount, International Trade, and the Foreign Exchanges. First Term: Nicholson, "Elements of Political Economy," Books I and II (revision), Book III, chapters 1-4, chapter 13, secs. 1-4, chapter 15; Book V, chapter 7; Mill, "Principles of Political Economy," Book III, chapters 1-6, 14-17; Book V, chapter 10, sec. 1; Bastable, "Theory of International Trade," chapters 1, 8, 9; L. L. Price, "Political Economy in England," chapters 1-4. Second Term: Nicholson, Book III, chapters 5-12; chapter 13, secs. 5, 6; chapter 14; Book V, chapter 9; Mill, Book III, chapters 7-13, 18-26; Withers, "The Meaning of Money"; Bastable, chapters 2-7, 10 and appendices; L. L. Price, chapters 5-8. Four hours a week.

11, 12. Political Economy (for Accountants, Bankers and Business Men). A general survey of the principles governing Production and Distribution of Wealth; and a more intensive study of the Theory of Exchange, including Value, Money, Credit, Banking, the Money-market, the Rate of Interest and the Rate of Discount, International Trade, the Foreign Exchanges, and the Stock Exchange.

Reading in supplement of the lectures: Nicholson, "Elements of Political Economy," a general knowledge of Books I and II, with a more exact knowledge of Book III; Withers, "The Meaning of Money"; Hammond and Jenk's, "Great American Issues." Two hours a week.

13, 14. Economic Theory. (a) A critical study of some of the more difficult problems in Economic Theory and the History of Theory, and (b) Application of Economic Principles to the more important present-day Economic Problems. Marshall, "Industry and Trade." Two hours a week.

For reading in supplement of the lectures, references will be given to the works of the leading authorities on the subjects under discussion.

15, 16. Public Finance. The characteristics and principles of Taxation and Public Expenditure; The Incidence of Taxation; Provincial and Municipal Taxation in Western Canada; National Credit and National Debts. Adam Smith, "Wealth of Nations," Book V, chapters 2, 3; Mill, "Principles," Book V, chapters 2-7; Nicholson, "Principles," Vol. III, Book V, chapters 5-13, 15-18; Seligman, "Essays in Taxation," and certain chapters in the same author's "Shifting and Incidence of Taxation," and in Bastable's "Public Finance." Three hours a week.

17, 18. Political Science. A critical study of Political Theories in their relation to actual political development, and a survey of Comparative Politics. The Nature and Origin of the State; Forms of Government; The Sphere of the State; Principles, Methods and Limitations of Governmental Interference; The Organisation of Government; Distribution of Powers.

For reading in supplement of the lectures, students will be referred to: Pollock, "History of the Science of Politics"; I. J. C. Brown, "English Political Theory"; Hobbes, "Leviathan," Part I, chapters 13-15, Part II; Locke, "Civil Government," Book II; Rousseau, "Contrat Social" (Eng. Trans.); Mill, "On Liberty," and "Principles of Political Economy," Book V, chapters 1, 8-11; Adam Smith, "Wealth of Nations," Book V, chapter 1; Nicholson, "Principles of Political Economy," Vol. III, Book V, chapters 1 to 4; Hobhouse, "Liberalism"; and to the relevant parts of Maine, "Early History of Institutions"; Sidgwick, "Elements of Politics" and "Development of European Polity"; Mill, "Representative Government"; Bagehot, "English Constitution"; Lowell, "The Government of

England" and "Governments and Parties in Continental Europe"; Bryce, "The American Commonwealth," "Studies in History and Jurisprudence" and "Democracy"; Keith, "Responsible Government in the Dominions" and "Imperial Unity and the Dominions." Two hours a week.

19, 20 (Minor) **Economic and Political Theory.** A study of the nature, measurement, and governing principles of Economic Progress, together with the Economic Functions of Government and Public Finance, and Modern Political Thought. First Term: Nicholson, "Principles of Political Economy," vol. III, Book IV, chapters 1-3; Book V, chapters 1-4, 14, 19; Mill, "Principles," Book V, chapters 1, 8-11; Adam Smith, "Wealth of Nations," Book V, chapter 1; L. T. Hobhouse, "Liberalism," chapters 1-4. Second Term: Nicholson, Book IV, chapters 4-7; Book V, chapters 5-13, 15-18; Mill, Book V, chapters 2-7; Adam Smith, Book V, chapters 2, 3; Hobhouse, chapters 5-9. Four hours a week.

GRADUATE COURSES

(Lectures may not be offered on these Courses in 1921-22.)

21, 22. **Political Economy** (Principal Subject). Marshall, "Principles of Economics." Books of reference (critical); Haney, "History of Economic Thought"; Keynes, "Scope and Method of Political Economy"; Nicholson, "War Finance"; Seligman, "The Income Tax." (Two Papers and Thesis.)

23, 24. **Economic History** (Subordinate Subject). Nicholson, "Rents, Wages and Profits in Agriculture"; Taussig, "Some Aspects of the Tariff Question"; Conant, "History of Modern Banks of Issue." (One Paper).

25, 26. **Political Science** (Subordinate Subject). Dicey, "Law and Public Opinion in England"; MacCunn, "Six Radical Thinkers"; E. Barker, "Political Thought in England from Herbert Spencer to the Present Day." (One Paper).

Note.—Candidates for the M.A. Degree in this Department may combine Political Economy with *either* (a) Economic History or (b) Political Science.

Second Year, Arts: Courses 1, 2.

Third Year, Arts: Major: Courses 3, 4, 5, 6, 7, 8.
Minor: Courses 9, 10.

Fourth Year, Arts: Major: Courses 13, 14; 15, 16; and 17, 18 or 19, 20.
Minor: Courses 19, 20.

Graduate Courses, Arts: Courses 21, 22; 23, 24; 25, 26.

Special Courses: Accountancy: Courses 11, 12.

Banking: Courses 3, 4.

Insurance: Part of Courses 15, 16. (Two hours a week. Half of Joint Minor Course with Department of Mathematics.)

DEPARTMENT OF MATHEMATICS AND ASTRONOMY

Neil Bruce MacLean, D.S.O., M.A., F.R.A.S.C.	<i>Professor</i>
Norman R. Wilson, M.A., Ph.D.	<i>Professor</i>
Lloyd A. H. Warren, M.A., Ph.D., F.R.A.S.	<i>Assistant Professor</i>
William Tier, M.A.	<i>Assistant Professor</i>
Frederick S. Nowlan, M.A.	<i>Lecturer</i>

N.B.—For key to system of numbering courses, see page 4.

PURE MATHEMATICS

1. Algebra. A review of the solution (graphical and analytical) of equations up to and including simultaneous quadratics; the theory of quadratic equations; and the work contained in A. T. DeLury's Intermediate Algebra (Copp, Clark Co.) to page 130, omitting Chapters I, IV; article 2, page 94; article 3, page 96; article 3, page 108; article 4, page 110. Four hours per week.

4. Analytical Geometry. The analytical geometry of the straight line, circle, parabola, ellipse and hyperbola. Crawley and Evans' Analytical Geometry (University of Pennsylvania, Philadelphia) to page 106. Four hours per week.

5, 6. Plane Trigonometry. Playne and Fawdry's Practical Trigonometry (Copp, Clark Co.). Students are required to become familiar with the use of tables in the solution of problems. For students in Arts and Science, two hours per week; for students in Engineering, two hours per week, First Term; three hours per week, Second Term.

7. Synthetic Solid Geometry. Hall and Stevens' "A School Geometry," Part VI (Macmillan Co.). Theorems 81, 83, 84, 91, 92, 94, 97, 98, and pages 383-442; or the corresponding work in Betz and Webb's Solid Geometry (Ginn & Co.). Two hours per week.

9. Synthetic Plane Geometry. A course specially selected to meet the needs of Engineering students. The text to be used will be announced at the opening of the session. Two hours per week.

10. Algebra. The binomial, exponential and logarithmic series; other series; surds and imaginary quantities; mathematical induction; undetermined coefficients; partial fractions. This work may be found in Hall and Knight's Higher Algebra, (Macmillan & Co.). Two hours per week.

11. General Mathematics. A short course in mathematics, especially designed for students in Senior Matriculation for Medicine. Arithmetical progression; geometrical progression, with applications to compound interest, annuities, debentures, sinking funds and life insurance. A brief introduction to Trigonometry up to the solution of right-angle triangles; graphs of statistics; analytical geometry of the straight line, and those properties of the circle, the parabola and ellipse which have practical applications. Four hours per week.

13. Analytical Geometry, Plane and Solid. A continuation of Course 4. Analytical Plane Geometry, with a brief introduction to Analytical Solid Geometry. Crawley and Evans' Analytical Geometry, page 107 to the end. Four hours per week.

16. Calculus. An elementary course in Differential and Integral Calculus with practical applications. Differentiation of algebraic and trigonometric functions, with corresponding integrations, measurement of rates, motion in curved paths, maxima and minima, definite integrals, areas and lengths of curves, volumes and surfaces. Calculus, March & Wolff, (McGraw-Hill Book Co., New York), to page 196, omitting sections 38, 51-54, 66, 67, 72, 74, 79-81, 84, 86-88, 91, 102. Four hours per week.

17. Analytical Geometry. Selections from Crawley and Evans's *Analytical Geometry*, page 107 to the end. Three hours per week.

19, 20. Algebra. Elementary Determinants and their application to the solution of linear equations; continued fractions; hyperbolic functions; graphs of algebraic, trigonometric, inverse, exponential, logarithmic and hyperbolic functions; limiting values and vanishing fractions. Two hours per week.

21, 22. Calculus. An elementary course with practical applications. Differentiation, measurement of rates, motion in curved paths, maxima and minima, partial derivatives, tangents and normals, curvature, evolutes, expansions, formation of differential equations, integration, areas and lengths of curves, volumes and surfaces. A course designed for Engineering students. Calculus, March and Wolff. Four hours per week, first term; two hours per week, second term.

23. Differential Equations. A short course specially adapted to meet the needs of students in Engineering and which will include special topics in Engineering mathematics. Text book announced later. Two hours per week.

25, 26. Algebra—Determinants and Theory of Equations. A continuation of Course 10. Hall and Knight's *Higher Algebra*, Chapters 19-26 inclusive, Chapter 29 and Chapters 33-35 inclusive. Two hours per week.

29, 30. Differential and Integral Calculus. A continuation of course 16. Integration, partial derivatives, tangents and normals to curves and surfaces, curvature, evolutes, expansions, formation of differential equations, n th derivatives, Leibnitz's theorem, indeterminate forms, maxima and minima, reduction formulae, double and triple integration. Calculus, March and Wolff. Three hours per week.

31. Spherical Trigonometry. Inverse notation, derivation of formulae, solution of the spherical triangle, areas of spherical triangles and polygons, applications to practical problems. Moritz' *Spherical Trigonometry*. (John Wiley, & Sons, New-York.) Two hours per week.

37, 38. Advanced Calculus. A continuation of Course 29, 30. (a) *Differential Calculus.* Expansions; maxima and minima; various equations of a curve; derived curves; envelopes; asymptotes; singular points. (b) *Integral Calculus.* Volumes by triple integration; definite integrals; beta and gamma functions; pedals and roulettes; Steiner's and Holditch's Theorems; the planimeter. Three hours per week.

39, 40. Differential Equations. Methods used in elementary practical applications to physical and engineering problems, symbolic methods, geometrical applications and elementary general theory. Murray, *Differential Equations*, (Longmans, Green & Co., New York.) Two hours per week.

41. History of Mathematics. The historical development of number systems, arithmetic, algebra, geometry, trigonometry and calculus, from the earliest times to the present. Two hours per week.

44. Advanced Analytical Geometry. Advanced work in conic sections, and an extension of the work in solid geometry of Course 13. The Department has a considerable number of the splendid thread and plaster models of Brill, for illustrating the teaching of geometry of three dimensions. Two hours per week.

45, 46. Projective Geometry. A course in modern projective geometry. Detailed outline and text book announced later. Two hours per week.

APPLIED MATHEMATICS.

52. Solid Geometry and Mensuration. Course in solid geometry as outlined in 7. The mensuration of plane and solid figures. Superficial area, and volume of the pyramid, cone, cylinder, sphere, wedge, frustums, segments, zones, sectors; the prismoidal formula; applications to problems in connection with the earth; lengths of open and crossed belts. Betz and Webb's Solid Geometry. Four hours per week.

54. The Theory of Errors and Method of Least Squares. The general principles of probability, the law of error, direct measurements of equal and different weights, mean square and probable errors, indirect measurements; conditioned observations; applications to empirical constants and formulae. One hour per week.

55, 56. Analytical Mechanics. Centres of gravity, moments of inertia, pressure and centres of pressure of fluids; statics of flexible cords, cords on rough surfaces; rectilinear and curvilinear motions; pendulums; projectiles; rotary motion; work and energy; friction; dynamics of rigid bodies; impact. Hancock, Applied Mechanics for Engineers, (Macmillan Co., New York). Arts and Science, two hours per week. Engineering, four hours per week, second-term. *Assistant Professor Warren.*

57, 58. Analytical Mechanics. Vectors, centroids, flexible cords, friction systems of particles and rigid bodies, equilibrium on a smooth or rough plane curve, skew curve or surface, centres of gravity, work, attraction and potential, stable and unstable equilibrium; velocity, acceleration, relative motion, rectilinear and curvilinear motion, motion in resisting media, law of gravitation, central orbits, constrained motion, pendulums, rotary motion, energy, dynamics of rigid bodies, impact. Theoretical Mechanics, Smith and Langley, (Ginn & Co.) Three hours per week. *Assistant Professor Warren.*

61, 62. Celestial Mechanics. Curvilinear motion, central orbits, derivation of Newton's law; determination of the orbit from the law of force; potential and attraction of bodies; the problem of two bodies; the problem of n bodies; the problem of three bodies; Lagrangian straight line and equilateral triangular solutions of the three body problem, surfaces of zero relative velocity, etc.; geometrical and analytical consideration of perturbations. Moulton, Introduction to Celestial Mechanics, (Macmillan Co., New York). Three hours per week.

ACTUARIAL SCIENCE

71, 72. The Mathematical Theory of Investment. Interest and discount; equation of payments; annuities certain; amortization of debts; amortization schedules; valuation of bonds, debentures and other securities; depreciation; building and loan associations; Skinner's Mathematical Theory of Investment, (Ginn & Co.) Institute of Actuaries' Text Book Part I. Two hours per week. *Assistant Professor Warren.*

73. Theory of Probability. The general theory of probability; the mortality table; probabilities of life; expectations of life; survivorship probability; formulae for the law of mortality. Hall and Knight's Higher Algebra; Institute of Actuaries Text Book, Part II. Two hours per week. *Assistant Professor Warren.*

74. Principles of Life Insurance. Life annuities; classification of policies; calculation of net premiums, loading, reserves; surplus, dividends, participating and non-participating policies; surrender values; policy loans; policy contracts; actuarial selection of risks; substandard lives; fraternal and assessment insurance; industrial insurance; group in-

surance; governmental supervision. Notes on Life Insurance by E. B. Packler. Two hours per week. *Assistant Professor Warren.*

76. Finite Differences. A course of lectures on the Calculus of Finite Differences and the theory of operators. Fundamental difference forms, factorial expansions, symbols of operation, Herschel's and MacLaurin's Theorems, interpolation formulae, statistical applications, approximations, mechanical quadratures, finite integration, Euler-MacLaurin sum series (Lubbock's, Woolhouse's and Hardy's formulae), convergency, difference equations. Burn and Brown, *The Elements of Finite Differences*. Two hours per week. *Assistant Professor Warren.*

78. The Theory of Errors and Method of Least Squares. See Applied Mathematics, Course 54.

ASTRONOMY

91, 92. General Astronomy. The constellations; the telescope; systems of co-ordinates; problems of the earth; Kepler's laws; gravitation; tides; moon; eclipses; time; solar system; comets and meteors; sun; stars; nebulae; evolution of solar system; spectrum analysis. Moulton, *Introduction to Astronomy*, (Macmillan & Co., New York). Two hours per week lectures. One hour per week laboratory work or evening observations.

93. Descriptive and General Astronomy. A short course specially devoted to those parts of astronomy necessary in surveying. The shape and motions of the earth; the constellations; systems of co-ordinates; refraction; aberration; parallax, eclipses; time, equation of time, conversion of time. General Astronomy by C. A. Young (Ginn & Co.; new edition). Two hours per week. Evening observations. *Professor MacLean and Assistant Professor Warren.*

96. Mathematical and Practical Astronomy. The solution of the astronomical triangle; time; conversion of time; the ephemeris; determination for any date of the apparent places of stars from the star catalogues; corrections for refraction, parallax, diurnal aberration and dip, to be applied to observed co-ordinates; description and working principles of the sextant, transit theodolite, observatory transit, and zenith telescope; the errors of these instruments and methods of dealing with them; methods of determining latitude, time, longitude and azimuth; practical observations and their reduction. Two hours per week. *Professor MacLean.*

97, 98. Celestial Mechanics. See Applied Mathematics, Course 61, 62.

GRADUATE COURSES.

The following courses in graduate study will be offered from time to time. A selection will be made at the beginning of each session to meet the needs and qualifications of students desiring such work.

Elliptic Integrals and Fourier Series. *Professor MacLean.*

Calculus of Variations (Elementary Course). *Professor Wilson.*

History of Mathematics. *Professor Wilson.*

Theory of Functions of a Real Variable. *Professor Wilson.*

Theory of Functions of a Complex Variable. *Assistant Professor Warren.*

Celestial Mechanics. *Assistant Professor Warren.*

An Advanced Course in Actuarial Science. *Assistant Professor Warren.*

Modern Analytical Geometry.

Advanced Theory of Conics.

Higher Plane Curves.

Senior Matriculation for Medicine: Course 11.

Senior Matriculation for Engineering: Courses 1; 4; 5, 6; 9; 10.

First Year, Arts: Required of all students, Courses 1; 4.

Mathematics Option, Courses 5, 6; 7; 10.

Second Year, Arts, Mathematics: Courses 13; 16.

Second Year, Arts, Astronomy: Courses 91, 92.

Third Year, Arts: Full Course*: Courses 25, 26; 29, 30; 31; 44; 55, 56; 71, 72.

Major and Minor: Courses 29, 30; and a selection from 25, 26; 31, 44; 55, 56; 71, 72.

Div. A, Nat. and Phys. Science: Courses 29, 30; 55, 56.

Div. B, Nat. and Phys. Science—Mathematics: Courses 29, 30; 55, 56.

Div. B, Nat. and Phys. Science—Astronomy: Courses 31; 54; 91, 92.

Fourth Year, Arts: Full Course*: Courses 37, 38; 39, 40; 57, 58; 73, 74; 76; 93; 96.

Major: Course 39, 40; and a selection from Courses 37, 38; 57, 58; 71, 72; 73, 74; 76; 93; 96.

Minor: A selection from Courses 37, 38; 39, 40; 57, 58; 71, 72; 73, 74; 76; 93; 96.

Div. A, Nat. and Phys. Science: Courses 39, 40; 57, 58.

Div. B, Nat. and Phys. Science—Mathematics: Courses 39, 40; 57, 58.

Div. B, Nat. and Phys. Science—Astronomy: Courses 93; 96; 97, 98.

Minor in Finance: Course 71, 72; or 73, 74.

First Year, Home Economics: Courses 1; 4.

First Year, Pharmacy Degree Course: Courses 1; 4; 5, 6.

First Year, Science: Courses 1; 4; 5, 6.

Second Year, Science—Mathematics I: Courses 7; 10; 13; 16.

Mathematics II: Courses 7; 16.

Third Year, Science—Mathematics: Courses 29, 30; 55, 56.

Astronomy: Courses 31, 54; 91, 92; 93; 96.

Fourth Year, Science—Mathematics: Courses 39, 40; 61, 62; balance to be outlined.

First Year, Architecture: Courses 1; 4; 5, 6.

Second Year, Architecture: Courses 17; 52.

First Year, Engineering: Courses 17; 19; 20; 52; 93.

Second Year, Engineering—Courses 21; 22; 31; 55, 56.

Third Year, Civil Engineering: Courses 54; 96.

Third Year, Electrical and Mechanical Engineering: Course 23.

* See page 58 for Courses in Physics required of students taking the Mathematics Course.

DEPARTMENT OF PHYSICS

Frank Allen, M.A., Ph.D., F.R.S.C.....	<i>Professor</i>
R. K. McClung, M.A., D.Sc., F.R.S.C.....	<i>Assistant Professor</i>
C. D. Miller, B.S., Ph.D.....	<i>Assistant Professor</i>

N.B.—For key to system of numbering courses, see page 4.

*** 1, 2. General Physics.** An introductory lecture course, illustrated by experiments, covering, in the first term, Mechanics, Hydrostatics and Heat, and, in the second term, Magnetism, Electricity, Radioactivity, Sound and Light. No text book is employed, but the ground is fairly well covered by Gage's Principles of Physics (Goodspeed). Three hours a week. *Professor Allen.*

3, 4. General Physics (Practical). A laboratory course to be taken by all students who take the lecture courses 1, 2. It is intended that the students shall acquire facility in the use of physical apparatus, in making records, and in computing results from the data obtained. A special laboratory note book must be kept by each student, which must contain complete details of all experimental work. The note book is necessary in order to obtain credit for the course.

One practical period per week. *Assistant Professor Miller.*

5, 6. Mechanics, Heat and Sound. A more advanced course in which special attention is given to the derivation of formulae and the solving of problems. Three hours per week.

7, 8. Electricity, Magnetism and Light. This course is similar in character and method to Course 5, 6. *Professor Allen.*

9, 10. General Physics. A more advanced course than 1, 2, covering, in the first term, Mechanics, Heat and Sound, and in the second term, Magnetism, Electricity and Light. Prerequisites, courses 1, 2, and 3, 4. Three hours per week. *Professor Allen.*

11, 12. Mechanics. A course in Statics and Dynamics involving the fundamental principles, with special attention to their application to engineering problems. It is designed especially for Engineering students. Two hours per week. *Assistant Professor McClung.*

13, 14. Heat, Light and Sound. This course is similar in character and purpose to course 11, 12, with which it is taken concurrently. Two hours per week. *Assistant Professor McClung.*

15, 16. Electricity and Magnetism. A course similar in character and purpose to the two preceding courses. Two hours per week. *Assistant Professor McClung.*

17, 18. Mechanics, Heat and Sound. A laboratory course in the theory and methods of physical measurements. Students are to perform an extensive series of experiments, and the results of each experiment are to be presented in a suitable report. Whenever possible, graphical methods are to be used. It is highly desirable that students should have an elementary knowledge of Analytical Geometry and Calculus. One practical period of three hours per week for each student. *Assistant Professor McClung, and* _____

19, 20. Electricity, Magnetism and Light. A laboratory course similar in character and method to Course 17, 18. One practical period of three hours per week for each student. *Assistant Professor McClung,* _____.

* Students in Arts intending to take any of the divisions of the special Course in Natural and Physical Science or the Special Course in Mathematics are strongly urged to elect this course in their First Year.

21, 22. **Mechanics, Heat, Light and Sound.** A laboratory course similar in character and method to course 17, 18, especially for Engineering students. One practical period of three hours per week under the direction of Assistant Professor McClung.

23, 24. **Electricity and Magnetism.** A course similar to course 19, 20, especially for Engineering students. One practical period of three hours per week under the direction of Assistant Professor McClung.

25, 26. **Electrical Measurements.** This course comprises a more advanced study, both theoretical and practical, of electrical measurements, and is especially suited to students in Electrical Engineering. It will involve the use of electrical standards, quantitative measurements of capacity of condensers, self and mutual induction, magnetic induction and hysteresis, potentiometer measurements, high and low resistance and photometry. *Assistant Professor McClung.*

27, 28. **Electricity, Magnetism and Light.** A lecture course in which special emphasis is placed on basic facts and ideas, and on mathematical methods used in dealing with these subjects. Three hours per week.

29, 30. **Electricity, Light and Radio-Activity.** An advanced lecture course for the Fourth Year of the Science Curriculum. Four hours per week.

31, 32. An advanced general laboratory course for the Fourth Year Science Curriculum. The experimental work undertaken will be varied to meet the special needs of students as far as the resources of the department permit. Research problems may also be studied. Eight hours per week. *Professor Allen.*

The laboratory and its equipment are available whenever possible to anyone desirous of engaging in original investigation in Physics.

TEXT BOOKS.

A Text Book of Physics (Watson); General Physics (Crew); The Tutorial Physics; Gage's Principles of Physics (Goodspeed); General Physics for Students (Edser); Heat for Advanced Students (Edser); Light for Students (Edser); Electricity and Magnetism (Hadley).

Senior Matriculation for Medicine: Courses 1, 2; 3, 4.

First Year, Arts: Courses 1, 2; 3, 4.

Second Year, Arts: Courses 9, 10, and selected parts of Courses 17, 18, and 19, 20.

Third Year, Arts: General; Courses 1, 2; 3, 4.

Mathematics; Courses 5, 6; 17, 18.

Natural and Physical Science; Courses 5, 6; 17, 18.

Fourth Year, Arts: Mathematics; Courses 7, 8; 19, 20.

Natural and Physical Science; Courses 7, 8; 19, 20.

First Year, Science: Courses 1, 2; 3, 4.

Second Year, Science: Courses 9, 10; 17, 18.

Third Year, Science: Courses 27, 28; 19, 20.

Fourth Year, Science: Courses 29, 30; 25, 26; 31, 32.

Second Year, Pharmacy: Courses 1, 2; 3, 4.

First Year, Pharmacy (Degree Course): Courses 1, 2, 3, 4.

Second Year, Pharmacy (Degree Course): Courses 9, 10, 17, 18.

First Year, Engineering: Courses 11, 12; 13, 14; 21, 22.

Second Year, Engineering: Courses 15, 16; 23, 24.

Third Year, Engineering (Electrical): Courses 25, 26.

First Year, Architecture: Courses 1, 2; 3, 4.

Second Year, Architecture: Courses 11, 12; 13, 14

DEPARTMENT OF BOTANY

A. H. Reginald Buller, B.Sc., Ph.D., D.Sc., F.R.S.C. *Professor*
 H. F. Roberts, B.A., M.Sc., LL.B., F.A.A.S. *Assistant Professor*
 C. W. Lowe, M.Sc. *Lecturer*

N.B.—For key to system of numbering courses, see page 4.

1, 2. General Botany. An introductory lecture course covering, among other topics, the following: Classification of objects; comparison of living and non-living matter; the differences between animals and plants. The structure of the seed and contents of its cells; the seeds of the pea, bean, castor oil plant, and date palm; the grains of wheat and corn; the conditions for germination and the phenomena accompanying it; the exhaustion of the reserve food-stuffs. The seedling: its structure, mode of development and relations with external conditions; the theory of irritability; geotropism, heliotropism and hydrotropism; the further development of shoot and root. The general morphology of the plant body, and the principal modifications of the stem, leaf and root; buds, grass-haulms, stolons, runners, rhizomes, corms, tubers, bulbs, spines and thorns, tendrils, cladodes, phyllodes, compound leaves, etc.; the growing point of stems; the origin of new leaves and buds. The cell and the cell theory; protoplasm as the physical basis of life; protoplasmic movement; turgidity; the structure and division of the nucleus; the origin of new cells by cell division. The internal morphology of the stem of monocotyledons and of dicotyledons; the functions of vascular bundles; the cambium and the secondary thickening of stems and roots; the secondary protective tissues, cork and bark. The leaf as an organ for carrying on the process of photosynthesis; the epidermis, including hairs and stomata, vascular bundles, mesophyll, and intercellular spaces; photosynthesis (carbon assimilation); the nature and function of chlorophyll corpuscles and of chlorophyll; the evacuation of the products of photosynthesis and their ultimate fate. The root: its root-tip, root-hairs, and mode of branching; the growing point. Climbing plants; stem-climbers and tendril-climbers; the physiology of climbing; lateral geotropism; reactions to the stimulus of contact. The elementary facts in the nutrition of the plant; the nature and sources of the raw food materials; the necessary chemical elements and their mode of absorption; water cultures; the constitution of the soil; the transpiration current; transpiration; photosynthesis; the products of metabolism, together with their distribution, storage, and utilization; respiration contrasted with photosynthesis. Carnivorous plants; *Drosera*, *Utricularia*, *Sarracenia*, *Dionaea* and *Nepenthes*. The classification of plants, including the main sub-divisions of the vegetable kingdom; the morphology and physiology of the following *Thallophyta*: *Protococcus* (*Pleurococcus*), *Saccharomyces* (yeast), *Bacteria*, *Spirogyra*, *Fucus*, *Mucor*, *Penicillium*, *Psalliota campestris* (mushroom). Alcoholic fermentation; *Bacteria* as the cause of nitrogen fixation, of fermentative processes, of putrefaction, and of disease. The *Bryophyta*, illustrated by a moss plant; the *Pteridophyta*, illustrated by a fern plant; alteration of generations. Reproduction in the *Phanerogamia*; the flower and its chief modifications in structural plan; the minute structure of the pollen grain and of the ovule; pollination and its agents; floral mechanisms as illustrated by the lady slipper, *Orchid*, *Primula*, *Salvia*, etc. Fertilization of the ovule; development of seeds and fruits; the plum, strawberry, orange, coconut, etc.; dispersion of seeds and fruits; the nature of pine cones, both male and female. Two hours a week.

3, 4. Laboratory Course in General Botany. This course is designed to accompany Course 1, 2. One practical period of two hours per week.

3a, 4a. Laboratory Course in General Botany. This course for

students in Arts is designed to accompany courses 1, 2. One practical period of two hours fortnightly.

5, 6. **Morphology and Physiology of the Flowering Plant.** A lecture course of two hours per week.

7, 8. **Laboratory Course on Morphology and Physiology of the Flowering Plant.** One period of two hours per week.

9, 10. **Systematic Botany of the Cryptogamia and Phanerogamia.** A detailed treatment of the Thallophyta, Bryophyta, Pteridophyta and the facts of reproduction in the Phanerogamia. A lecture course of three hours per week.

11, 12. **Laboratory Course in Systematic Botany.** This course is designed to accompany Course 9, 10. Five hours per week.

14. **Evolution and Inheritance.** A broad treatment of the Doctrine of Evolution, Mendel's Laws of Inheritance, etc. One hour per week.

15, 16. **Special Courses.** Advanced lectures on Morphology, Physiology, Ecology, Palæobotany, Inheritance, etc. Four hours per week.

17, 18. **Laboratory Course for Advanced Botany.** This course is designed to accompany Courses 14, 15 and 16. Nine hours per week.

19. **Genetics.** This course is designed to deal with the principles of genetics, especially in relation to plant life. It involves a study of the laws underlying inheritance, the causes of variation, and the physical basis of heredity. The practical features of plant breeding are dealt with in detail.

20. **Advanced Plant Physiology.** In this course, intended for those who have completed the Courses 7 and 8, special problems in plant physiology, e.g. osmosis, transpiration, photosynthesis, are assigned to each student.

Senior Matriculation for Medicine: Courses 1, 2; 3, 4.

Second Year, Arts: Courses 1, 2; 3a, 4a.

Third Year, Arts: Courses 5, 6; 7, 8.

Fourth Year, Arts: Courses 9, 10; 11, 12; 14, 19, 20.

Second Year, Science: Courses 1, 2, 7, 8.

Third Year, Science: Courses 9, 10, 11, 12; 14.

Fourth Year, Science: Courses 15, 16; 17, 18, 19, 20.

Second Year, Pharmacy: Courses 1, 2; 3, 4.

Second Year, Pharmacy (Degree Course): Courses 1, 2, 7, 8.

Third Year, Pharmacy (Degree Course): Courses 9, 10, 11, 12, 14.

TEXT BOOKS

Sargent: Plants and their Uses; Bergen & Caldwell: Practical Botany; Strasburger: Text Book of Botany; Coulter, Barnes & Cowles: Text Book of Botany; R. C. Punnett, Mendelism; W. Lochhead, An Introduction to Heredity and Genetics.

At the beginning of the session there will be several excursions to the prairie, woods and river side for the purpose of studying the algae, fungi, and flowering plants in relation to their environment. Students are recommended to acquaint themselves with the Canadian orders of flowering plants during the summer vacation. The most suitable flora is Gray's New Manual of Botany.

The laboratory of the Department will be open and encouragement will be given to any one desiring to carry on research on some botanical problem.

DEPARTMENT OF GEOLOGY AND MINERALOGY

Robert C. Wallace, M.A., Ph.D., D.Sc., F.G.S., F.R.S.C. *Professor*
 Justin S. De Lury, B.A. *Assistant Professor*
 Edward M. Burwash, M.A., Ph.D. *Assistant Professor ad interim*

N.B.—For key to system of numbering courses, see page 4.

1, 2. General Geology. The more important minerals and rocks. Earth features and the forces that modify them. Structures seen in rocks. Rocks and the soil. Water supply. Ore deposits. Fossils and their meaning. Origin and age of the earth. Historical geology, in particular of Western Canada. Evolution of plant and animal life. Blackwelder and Barrows' *Elements of Geology*. Two hours a week.

3, 4. Practical Demonstrations. On minerals, rocks, and fossils, and in topographical and geological mapping. One hour a week.

5, 6. Engineering Geology. Similar in scope to course 1, 2, but with particular application to engineering problems, such as water supply, foundations, building stone, mining processes, and structural materials. Ries and Watson's *Engineering Geology*. Two hours a week.

7, 8. Practical Geology. Systematic examination of minerals by blowpipe and dry way tests. Identification of the commoner minerals and rocks. Mapping of geological sections. Identification of type fossils. Two hours a week.

9. Elementary Mineralogy. The crystalline and physical properties of minerals, in particular of the more soluble minerals. Methods of identification. Two hours a week.

11, 12. Mineralogy and Crystallography. Laws of crystallography. Stereographic projection. Systems and classes. Optical properties. Classification and systematic study of minerals. Genetic relationships. Rogers' *Introduction to the Study of Minerals*. Two hours a week.

13, 14. Practical Mineralogy and Crystallography. Crystal drawing. Identification of crystal forms. Goniometric investigation of single crystal. Study and identification of minerals. Two hours a week.

15, 16. Petrology. Optical properties of rock-forming minerals under polarising microscope. Classification of rocks. The characteristics of the various rock families. Magmatic differentiation. Physicochemical laws governing the formation of igneous, metamorphic, and sedimentary rocks. Harker's *Petrology*. Two hours a week.

17, 18. Practical Petrology. Identification of rock-forming minerals under the microscope. Study and identification of rocks in thin sections, and in hand specimens. Preparation of thin sections. Quantitative estimation of rocks. Five hours a week.

19. Economic and Mining Geology. Nature and origin of ore deposits. Natural occurrence, methods of identification, and evaluation of the more important ores. Geological structure of chief ore-bearing regions in Canada. Mining processes. Three hours a week.

20. Vertebrate and Invertebrate Palaeontology. A study mainly of the invertebrates, and more especially of their hard parts. Classification, distribution, and geological range. Fossils of North America, and particularly of Western Canada. Woods' *Palaeontology*. Two hours a week.

22. Practical Vertebrate and Invertebrate Palaeontology. Preparation of material for study. Examination of collections of North American fossils. Three hours a week.

23, 24. Advanced Economic Geology. An exhaustive study of the genesis and mineralogy of ore deposits. The structural geology and petrography of the great mining districts of the world. Lindgren's Mineral Deposits. Two hours a week.

25, 26. Advanced Investigations and Research. Students in the M.A. course, and the more advanced students in the fourth year of the B.Sc. course, will carry out, under direction, independent investigations on some field or laboratory problem. The laboratories are open all day for this purpose.

27, 28. Geological Excursions. During October, the earlier part of November, and the latter part of March, excursions will be conducted on Saturdays to places of geological interest in the neighborhood of Winnipeg. These excursions form an integral part of the class work.

29, 30. Extension Evening Courses. Courses are offered in all branches of Geology, Mineralogy, Ore-Deposits, etc. The nature of the courses, their duration, etc., are arranged by consultation with those interested. The courses are free, or nominal fees only are charged for a few courses.

31, 32. Assaying. A course on the determination of the precious metals in ores by means of the fire assay, for those students who are able to take such a course in addition to their regular work. A knowledge of elementary chemistry is prerequisite, and some acquaintance with minerals and rocks is desirable. Three hours a week.

N.B.—Students who intend to take Geology as a final subject should, if possible, spend their summers as student assistants under the Geological Survey of Canada.

Additional Text-books Recommended for Different Courses

Text-book of Geology, Pirsson and Schuchert; Geology, Chamberlin and Salisbury; Handbook of Minerals, Butler; Crystallography, Williams; Determinative Mineralogy, Brush and Penfield; Practical Mineralogy, Rowe; Minerals and How they Occur, Miller; Palaeontology, Woods; Principles of Economic Geology, Emmons; Economic Geology, Ries; Metamorphic Geology, Leith and Mead; Manual of Petrographic Methods, Johannsen; Determination of Rock Forming Minerals, Johannsen; Quantitative Classification of Igneous Rocks, Cross, Iddings, Pirsson and Washington; Notes on Assaying, Lodge; Assaying, Fulton.

Second Year, Arts: Courses 1, 2; 3, 4.

Third Year, Arts: Natural and Physical Science, Div. A, C & D: Courses 1, 2 (if not already taken); 7, 8; 11, 12; 13, 14.

Fourth Year, Arts: General: Courses 1, 2; 3, 4.

Natural and Physical Science, Div. A, C & D: Courses 15, 16; 17, 18; 19 (optional).

Natural and Physical Science, Div. D. (additional): Courses 20 and 22, with modified Courses 17, 18.

Graduate, Arts: Courses 23, 24; 25, 26.

Second Year, Science: Courses 1, 2; 7, 8.

Third Year, Science: Courses 11, 12; 13, 14; 19; 20 and 22.

Fourth Year, Science: Courses 15, 16; 17, 18; 23, 24.

Third Year, Civil Engineering: Courses 5, 6, 7, 8.

First Year, Pharmacy (Degree Course): Course 9.

First Year, Pharmacy: Course 9.

DEPARTMENT OF CHEMISTRY

Matthew A. Parker, B.Sc., F.I.C., F.C.I.C., F.R.S.C.	Professor
Henry P. Armes, B.Sc., Ph.D., F.C.I.C.	Assistant Professor
John W. Shipley, B.A., Ph.D., F.C.I.C.	Assistant Professor
_____	Demonstrator
_____	Demonstrator
_____	Demonstrator
_____	Demonstrator

N.B.—For key to system of numbering courses, see page 4.

The following are among the lecture courses given. These are all illustrated by experiments.

1, 2. Elementary Inorganic Chemistry. Fundamental principles of chemistry; elements and compounds; laws of combination; atoms and molecules; acids, bases, salts; properties of some common elements and their more important compounds. The subject is treated in an elementary way. Textbook recommended, McPherson & Henderson's *An Elementary Study of Chemistry* (Ginn & Co.). Two hours per week lectures, and one hour tutorial, with laboratory work in addition.

3, 4. Inorganic Chemistry. Similar to course 1, 2, but more advanced, and deals with some of the more general subjects barely touched on in the more elementary course. Three hours per week, one hour tutorial, with laboratory work. Textbook recommended, Smith's *General Chemistry for Colleges* (Century Co.).

5, 6. Medical Chemistry. The subjects dealt with are selected with regard to their importance for medical students. About half of the course deals with inorganic and half with organic chemistry. Three hours per week lectures, with laboratory work. Textbooks recommended, Smith's *General Chemistry for Colleges* (Century Co.) and Haskin's *Organic Chemistry* (Wiley).

7, 8. Organic Chemistry. An introduction to the study of organic chemistry. General principles; fatty compounds; some typical carbocyclic and a few heterocyclic compounds. Two hours per week lectures. Textbooks recommended, Perkin and Kipping's, or Holleman's *Organic Chemistry*.

9, 10. Electro-Chemistry. Theories and laws relating to practical applications of electro-chemical processes. One hour per week. Textbook recommended, Allmand's *Principles of Applied Electro-Chemistry* (Longmans, Green & Co.).

11, 12. Physical Chemistry. Introduction to Physical Chemistry. Two hours per week lectures. Textbook recommended, Lincoln's *Textbook of Physical Chemistry* (Heath & Co.).

13, 14. Advanced Organic Chemistry. Subjects chosen with reference to literature available in the library. Two hours per week.

15, 16. Advanced Inorganic Chemistry. Chiefly descriptive inorganic chemistry; subjects chosen with reference to literature available in the library. Two hours per week.

17, 18. Advanced Physical Chemistry. A continuation of Course 11, 12. Two hours per week.

19, 20. History of Chemistry. A brief outline of the history of some of the more important discoveries and theories of chemistry. One hour per week throughout the session.

The following *laboratory* courses are offered:

21, 22. Practical Chemistry I. Experiments illustrating general principles and the preparation and properties of substances studied in course 1, 2. One period of three hours per week.

23, 24. Practical Chemistry II. Experiments illustrating general

principles and the preparation and properties of substances studied in course 3, 4. Simple qualitative analysis. One period of three hours per week.

25, 26. Practical Chemistry III. Preparation of some substances not included in course 21, 22; quantitative experiments illustrating fundamental laws; qualitative analysis. Three periods of two hours per week.

27, 28. Practical Chemistry IV. Inorganic preparations; qualitative analysis; simple gravimetric and volumetric analysis; reactions of some organic substances; preparations. Two periods of three hours per week.

29, 30. Practical Chemistry V. Quantitative analysis leading up to methods of water analysis, coal analysis, etc., of interest to engineering students. One period of three hours per week.

31, 32. Practical Chemistry VI. Preparation of organic compounds; simple quantitative inorganic analysis. Two periods of three hours per week.

33, 34. Practical Chemistry VII. Qualitative inorganic analysis; quantitative analysis; preparation of organic compounds. Three periods of three hours per week.

35, 36. Practical Chemistry VIII. Physico-chemical measurements.

37, 38. Practical Chemistry IX. Methods of organic analysis; organic preparations.

39, 40. Practical Chemistry X. Methods of inorganic analysis; inorganic preparations.

Special students may be enrolled for the purpose of carrying on such advanced work as the equipment permits of, and special facilities will be given to those capable of engaging in research work.

Each student is supplied with such apparatus as may be required, with the exception of platinum wire and foil, laboratory towel, etc., which he must provide for himself.

A deposit of five dollars is paid to the Registrar at the beginning of each session, and all breakages will be made good out of this.

A record of all laboratory work must be kept in regulation report books. These are examined periodically during the session, and must be handed to the examiners in chemistry previous to the practical examination for the degree.

Attention is called to the regulation regarding practical work and reports on pages 80 and 81.

Senior Matriculation: Courses 1, 2; 21, 22.

First Year, Arts: Courses 1, 2; 21, 22.

Second Year, Arts: Courses 1, 2; 21, 22.

Third Year, Arts: Courses 3, 4; 25, 26.

Fourth Year, Arts: Courses 7, 8; 11, 12; 33, 34.

First Year, Science: Courses 3, 4; 21, 22, 25, 26.

Second Year, Science: Courses 3, 4; 25, 26.

Third Year, Science: Courses 7, 8; 11, 12; 33, 34.

Fourth Year, Science: Courses 19, 20; two of 13, 14; 15, 16; 17, 18; and 35, 36; and one of 37, 38; 39, 40.

First Year, Medicine: Courses 5, 6; 27, 28.

First Year, Pharmacy: Courses 1, 2; 23, 24.

Second Year, Pharmacy: Courses 5, 6; 27, 28.

First Year, Pharmacy (Degree Course): Courses 1, 2, 21, 22.

Second Year, Pharmacy (Degree Course): Courses 3, 4, 25, 26.

Third Year, Pharmacy (Degree Course): Courses 7, 8, 11, 12, 33, 34.

First Year, Engineering: Courses 29, 30.

Fourth Year, Engineering (Electrical): Courses 9, 10.

DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY

V. H. K. Moorhouse, M.B. _____ *Professor*
 _____ *Assistant*

N.B.—For key to system of numbering courses, see page 4.

2. An Introduction to Physiology and Pharmacology. The chief parts of the body; the skeleton (bones of the head, spine, thorax, pelvis, arm and leg); outline of the muscular system; general plan of the nervous system; the organs of digestion, circulation and respiration; the microscopic structure of the body; physiology of muscle and nerve, digestion, circulation, respiration, excretion, general metabolism; the ductless glands, the nervous system, voice and speech, locomotion, the special senses (sight, hearing, taste, smell, and touch); the physiological action of drugs. Textbook, Huxley's *Elementary Physiology*, latest edition. Two lectures a week, Second term (Tuesdays and Thursdays, 11 a.m.).

4. An Introduction to Experimental Physiology. Anatomy of the frog; ciliary motion; chief apparatus employed in experimental physiology; muscular contraction; effect of curari; tetanus; fatigue; normal beat of frog's heart; nervous control of the heart; effect of nicotine and atropine on the heart. Textbook, Schäfer's *Experimental Physiology* (Longman's 1912 Ed.). Two hours laboratory work per week, Second Term (Tuesdays, 9 to 11 a.m.).

9, 10. Elementary Physiology. Structure and functions of the cell, and of the simple tissues (general physiological methods; graphic records; the cell as an elementary organism, functions of nucleus and protoplasm; the vital phenomena of cells; manifestations of life; stimuli and irritability). General chemistry of the animal body. Physiology of muscle (contraction of muscle; gross change in form; microscopic change; simple twitch; effects of different conditions; isometric and isotonic contraction; work of muscle; muscle wave; summation of stimuli, tetanus; voluntary contraction; the muscle sound; physical and chemical properties of muscle; chemical and electrical changes of muscle during contraction). Physiology of nerve (transmission of the nerve impulse; rate of transmission; conductivity; electrotonus and Pflüger's law; electrical changes during contraction; negative variation). Digestion and absorption (the digestive enzymes; the tissues and mechanisms of digestion; properties of saliva, gastric juice, bile, pancreatic juice, and the succus entericus; the foodstuffs and the changes they undergo in digestion; nervous mechanism of secretion of the digestive juices; chemical mechanism of secretion; absorption by capillaries and by the villi; absorption in the large intestine; muscular mechanisms of digestion, mastication, deglutition, movements of intestine (peristaltic movements); vomiting; defaecation; the lacteals and the lymphatic system). The circulation of blood and lymph (structure and physical properties of the blood vessels; blood pressure; rate of flow of blood; action of the heart and its valves; the heart sounds; pressure in the heart cavities during a cardiac cycle; the cardiac impulse; cardiograms; the pulse; the cardiac rhythm throughout vertebrates; functions of the cardiac ganglia; innervation of the heart; the work of the heart; innervation of the blood vessels; the capillary circulation; inflammation; variations in the quantity of blood and lymph). Respiration (general mechanics of respiration; changes in the air during respiration; circumstances influencing chemical changes; respiratory changes in the blood; spectroscopic study of arterial and venous blood; derivatives of haemoglobin; respiratory changes in the lungs and tissues). Excretion (structure and functions of the kidneys;

secretion of urine; nature of tubular and glomerular secretion; chemistry of the urine; nervous mechanism of micturition; structure and functions of the skin), etc. Textbooks: Stewart, *Manual of Physiology* (W. B. Saunders, Philadelphia); Howell, *Textbook of Physiology* (W. B. Saunders, Philadelphia); Starling, *Human Physiology* (J. & A. Churchill, London); Reference books: Schäfer, *Textbook of Physiology*, 2 vols. (Young J. Pentland, Edinburgh and London); Howell, *An American Textbook of Physiology*, 2 vols. (W. P. Saunders, Philadelphia); Monographs in Biochemistry (Longmans, London and New York); Vincent, *Internal Secretion and the Ductless Glands* (Arnold, London); Hutchinson, *Applied Physiology* (Arnold, London). Two lectures a week, both terms (Mondays and Wednesdays, 2 p.m.)

11, 12. Advanced Physiology. Metabolism of proteins, fats and carbohydrates, glycosuria, diabetes; starvation; source of muscular energy; animal heat; nutrition and diet; classification of foods. Internal secretion and the ductless glands (internal secretion as applied to glands which have also an external secretion; internal secretion of the adrenals, thyroids and parathyroids; pituitary body; functions of thymus, spleen, haemal glands). Structure and functions of the nervous system (nerve cells and nerve fibres); the neurone theory; chemistry of nervous tissues; structure and functions of the spinal cord, reflex actions; structure and functions of the medulla oblongata; nuclei of cranial nerves; structure and functions of the pons varolii and cerebellum; nuclei of the cranial nerves; structure and functions of the mesencephalon, thalamencephalon, the cerebral hemispheres, cerebral cortex, motor areas; attempts to locate higher psychical functions, association areas; the nature of mind; the sympathetic and related system of nerves; the automatic fibres; preganglionic and postganglionic fibres; the cranial and sacral autonomic fibres; the enteric nervous system). Special senses (the structure and functions of the eye, ear, and nose; modes of termination of sensory nerves; the skin and tactile sensation; sensations of heat, cold and pain). Voice and speech (anatomy and physiology of the larynx; the quality, pitch and loudness of the human voice; the different voice registers; vowel sounds). Physiology of reproduction. Textbooks: As for Course 9, 10. Students at the end of their second year in Physiology will be expected to show a competent knowledge of both year's work. Two lectures a week for both terms (Tuesdays and Fridays at 2 p.m.).

13. Elementary Practical Experimental Physiology. Simple experiments in muscle-nerve physiology, graphic records, effects of varying conditions on muscular contractions, transmission of nerve-impulse, electrotonus, Pflüger's law, the beat of the heart and its nervous control, perfusion through blood vessels, reflex action, etc. Textbook: Schäfer, *Experimental Physiology*, 1912 Ed. (Longman's, London and New York). Two three-hour periods per week during one term (Mondays and Wednesdays 3 to 6 p.m.).

14. Advanced Practical Experimental Physiology. Some of the more difficult experiments of the elementary course repeated and studied in greater detail, electro-physiology (galvanometry), blood pressure, ophthalmoscope, laryngoscope, experiments upon the special senses, physiological, psychological, etc. Textbook, Alcock & Ellison, *Practical Physiology* (Longman's, London and New York). Two three-hour periods per week during the Second Term (Tuesdays and Fridays, 3 to 6 p.m.).

19, 20. Advanced Laboratory Courses are given in connection with the Fourth Year work for the B.Sc. degree. The laboratories are open daily from 9 a.m. to 11 p.m. for the prosecution of original research. Application is to be made to the Professor.

21, 22. **Practical Pharmacology.** An experimental course on the physiological action of drugs. One three-hour period per week (Thursdays).

Breakages. A deposit of \$5.00 is paid to the Registrar at the beginning of each session, and all breakages will be made good from this. See page 92.

PHYSIOLOGICAL RESEARCH PRIZE

A fund has recently been raised among medical men and others interested in Physiology and will be devoted to providing annually, or at longer intervals, a prize for original investigation carried out in the Physiology Department. The following regulations govern the award of the prize:

(1) The prize shall be called "The Physiological Research Prize."

(2) The prize shall be awarded annually or biennially, or may be withheld at the discretion of the Committee (*vide infra*).

(3) The interest on the money invested shall be utilized to provide a medal and a money prize for the report on an original investigation which shall be deemed by the Committee to be of the greatest merit.

(4) The essay submitted must in each case contain an account of original investigation carried out wholly or in part in the Department of Physiology and Physiological Chemistry of the University of Manitoba.

(5) The subject of the investigation shall be some branch of Physiology or some allied medical or biological subject, and shall be approved by the Committee before the work is commenced.

(6) Work carried out in conjunction with another investigator or results published conjointly with another author may be submitted by a candidate for the prize. In such cases the Committee will take into consideration the part actually taken by the candidate in the work done. Further in such cases, the candidate must send in an account of the results obtained in the form of an essay, which must be his own unaided composition.

(7) Registered students of the University of Manitoba and members of the staff other than professors or lecturers shall be eligible to compete.

(8) Medical practitioners shall be eligible to compete on registration as students of the University.

(9) The duty of awarding the prize shall be delegated to a committee consisting of the Professor of Physiology and two others selected annually by the University Council.

(10) Essays must be in the hands of the Registrar before April 30th of each year.

Third Year, Science:	Courses 9, 10; 13.
Fourth Year, Science:	Courses 11, 12; 14; 19, 20.
Second Year, Medicine:	Courses 9, 10; 13.
Third Year, Medicine:	Courses 11, 12; 14; 21, 22.
Second Year, Pharmacy:	Courses 2, 4.
Graduate:	Courses 19, 20.

DEPARTMENT OF BIOCHEMISTRY

A. T. Cameron, M.A., B.Sc., F.I.C., F.C.I.C., F.R.S.C. *Associate Professor*
Assistant

N.B.—For key to system of numbering courses, see page 4.

1, 2. Elementary Biochemistry. The general chemistry of animal and plant tissues. Enzyme action. The composition of food-stuffs; proteins, fats, carbohydrates, vitamins, etc. Composition of the digestive juices. Digestion of food-stuffs. Absorption of the products of digestion. Chemistry of blood; haemoglobin and its derivatives. Chemistry and physical chemistry of respiration. Secretion of urine, etc. Chemistry of the excreta. Textbooks: Hawk's Practical Physiological Chemistry (Blakiston, Philadelphia), and, for reference, Mathew's Physiological Chemistry (Wood, New York). One lecture a week, both terms (Wednesdays, 2 p.m.).

3, 4. Advanced Biochemistry. Metabolism. Assimilation of food units (glucose, amino-acids, fats, etc.) in the body. Catabolism. Types of inanition. Metabolism of inanition. Relation of the endocrine glands to metabolism. Muscle metabolism and the production of energy. Abnormal metabolism of glucose, uric acid, creatine, etc., acidosis. Energy requirements of the body. Heat maintenance. Diet. The importance of vitamins and other minor factors of a diet. Physical chemistry of living processes. Textbooks: No single textbook covers this course. The theoretical portions of Hawk's Practical Physiological Chemistry should be read, and, for reference, Mathew's Physiological Chemistry should be used critically. One lecture a week, both terms (Fridays, 2 p.m.).

5, 6. Elementary Practical Biochemistry. Detection of the elements in animal and plant tissues. Study of enzyme action. Measurement of enzyme activity. Properties of carbohydrates, fats, and proteins, and their derivatives. Methods of estimation of sugars, fats, amino-acids, etc. Study of the digestive juices and their action. Composition of food-stuffs, etc. Text book: Hawk's Practical Physiological Chemistry (Blakiston, Philadelphia). Reference book, Plimmer's Practical Organic and Biochemistry, (Longmans, London and New York). One three-hour period, both terms (Section A, Mondays, 3-6 p.m., section B, Wednesdays, 3-6 p.m.).

7, 8. Advanced Practical Biochemistry. Experiments on muscular and nervous tissue and on blood. Blood analysis. Oxygen capacity, respiratory quotient, acidosis. Composition of normal and pathological urine. Quantitative estimation of the chief constituents of urine. Study of a simple problem in metabolism. Text book: Hawk's Practical Physiological Chemistry, (Blakiston, Philadelphia). Reference book, Plimmer's Practical Organic and Biochemistry, (Longmans, London and New York). One three-hour period, both terms (Friday, 3-6 p.m.).

9, 10. Advanced Laboratory Courses. Will be given as required in connection with the Fourth year work for the B.Sc. degree. The laboratories are open daily from 9 a.m. to 6 p.m. (and, by arrangement, till 11 p.m.) for the prosecution of original research.

Breakages. A deposit of \$5.00 is paid to the Registrar at the beginning of each session, and all breakages will be made good from this.

Second Year, Medicine: Courses 1, 2; 5, 6.

Third Year, Medicine: Courses 3, 4; 7, 8.

Third Year, Science: Courses 1, 2; 5, 6.

Fourth Year, Science: Courses 3, 4; 7, 8; 9, 10.

Graduate: Courses 9, 10.

DEPARTMENT OF ZOOLOGY

Chas. H. O'Donoghue, D.Sc., F.Z.S.	Professor
C. F. Curtis Riley, M.A., M.S.	Assistant Professor
Eileen Bulman, M.A., B.Sc.	Lecturer
	Fellow

1, 2. Junior Course in Zoology. A course of lectures dealing with the general principles of zoology; the outlines of the morphology and anatomy of a progressive series of animal types, both vertebrate and invertebrate; the elements of animal physiology, cytology, histology and bionomics; the main phenomena of reproduction, behaviour, ecology, development and life histories; an elementary treatment of evolution, heredity and variation. Two hours per week.

3, 4. Junior Course in Practical Zoology. A course of laboratory work to accompany the foregoing, providing an introduction to zoological methods. Two hours per week.

5. Elementary Course in Zoology. A general account of the Frog treated as an introduction to the anatomy, physiology and histology of a vertebrate type. Adapted for First Year Pharmacy students.

Text-book: O'Donoghue, Introduction to Zoology. Two hours per week.

6. Elementary Course in Practical Zoology. A series of practical exercises intended to accompany the preceding lecture course. Two hours per week.

7. Introductory Course in Zoology. The Frog and certain of the lower animals treated as an introduction to Zoology, Anatomy and Physiology. This course is adapted for the requirements of Senior Matriculation for Medicine and is preparatory to subsequent work.

Text-book: O'Donoghue, Introduction to Zoology. Two hours per week.

8. Introductory Course in Practical Zoology. Practical classes to accompany the preceding lecture course. Two and a half hours per week.

9, 10. Zoology for First Year Medicine. A course of lectures dealing with the anatomy and physiology of a progressive series of animal types (mainly vertebrate); the elements of animal histology and cytology; the main phenomena of reproduction; development and life histories and an elementary treatment of evolution, heredity and variation.

Text-book: O'Donoghue, Introduction to Zoology.

11, 12. Practical Zoology for First Year Medicine. A course of laboratory work to accompany the foregoing, providing an introduction to general zoological methods. Five and a half hours per week.

13, 14. Comparative Anatomy of the Chordata. A general account of the structure and classification of the Chordata including the evolution of the main groups. Parker and Haswell's Textbook of Zoology. Two hours per week. (Not given in 1921—22).

15, 16. Practical Course in the Comparative Anatomy of the Chordata. A laboratory course accompanying the above and illustrating the salient features of the anatomy, osteology and histology of the Chordata. Six hours per week. (Not given in 1921—22).

17, 18. Comparative Anatomy of the Invertebrata. A general account of the structure and classification of the Invertebrata including larval forms and the light they throw on the relationships of the various groups. Parker and Haswell's Textbook of Zoology. Two hours per week.

19, 20. Practical Course in the Comparative Anatomy of the Invertebrata. A laboratory course accompanying the above and illustrating the salient features of the gross morphology, anatomy and histology of the Invertebrata. Six hours per week.

21. History of Zoology. A brief account of the history of zoology with reference to the principal workers in that branch of Science and the theories they have propounded. One hour per week.

22. Animal Behaviour. A course treating of the simpler forms of animal responses, such as tropisms, reflexes, habits and instincts, with some attention given to intelligent acts. The viewpoints of such men as Loeb, Jennings, Lloyd Morgan, Lewis, Mills, Thorndyke, Bohn will receive consideration. One seminar or lecture each week.

24. Animal Behaviour, Practical. A series of practical exercises to illustrate the preceding lectures.

25. Embryology of the Vertebrata. The outlines of the embryology of the higher Chordata studied in a series of selected types. One hour per week.

27. A Practical Course in the Embryology of the Vertebrata. A laboratory course accompanying the above, providing an introduction to embryological technique and an opportunity of studying series of preparations. Three hours per week.

28. Zoogeography. The division of the land masses of the world into regions according to the animals they contain. The distribution of the main groups, and the animals characteristic of the various divisions. The factors encouraging and limiting dispersal; former land connections, continuous areas, barriers, human interference, etc. One hour per week.

29, 30. Advanced Studies. Students in the Fourth Year of the Science Course will be given opportunities for further reading and practical work including the carrying out of independent investigations. Hours by arrangement.

Research. Encouragement will be given to anyone wishing to conduct research and such equipment as is present in the laboratories and library will be available.

Text Books. Advice regarding special text books, reference books and books for supplemental reading will be given in the various senior classes.

Senior Matriculation for Medicine: Courses 7, 8.

First Year, Pharmacy: Courses 5, 6.

Second Year, Pharmacy (Degree Course): Courses 1, 2, 3, 4.

Second Year, Arts: Courses 1, 2; 3, 4.

Second Year, Science: Courses 1, 2; 3, 4.

Third Year, Arts: Courses 13, 14, 15, 16.

Third Year, Science: Courses 13, 14, 15, 16, 21, 22, 24.

Fourth Year, Arts: Courses 13, 14, 15, 16.

Fourth Year, Science: Courses 13, 14, 15, 16, 21, 22, 24.

First Year, Medicine: Courses 9, 10, 11, 12.

CURRICULUM IN PHARMACY

DIPLOMA IN PHARMACY

The University of Manitoba has entered into an arrangement with the Pharmaceutical Association of Manitoba whereby the work of instruction in Pharmacy of students desiring to qualify as licensed Pharmaceutical Chemists in Manitoba (formerly carried on by the Association in its own college, known as the Manitoba College of Pharmacy), is undertaken by the University. The Association continues to prescribe the preliminary educational qualifications, the conditions of apprenticeship and practical training, admission fees, etc., and issues the license, the University being responsible only for the work of instruction and examination. Similarly, the Association determines the value of all professional certificates or other like credentials from other Associations or institutions, and reports to the University on the credit to be given thereon on the course for the diploma in Pharmacy. Every candidate for registration as a Certified Apprentice must produce evidence that he has passed the Matriculation Examination for Arts or Science of the University of Manitoba, or in lieu thereof evidence that he has passed an examination reasonably equivalent to the said Matriculation examination. Such standing must be clear of all conditions. Intending students must have their period of apprenticeship certified on special forms obtainable on request from the Registrar of the Pharmaceutical Association. Such certificates must be presented to the Registrar of the Association for his verification not later than August 15th of the year in which the student intends to enter the University Course in Pharmacy.

The course covers two academic years, as follows:

First Year

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
1, 2; 23, 24	63	Chemistry	4	3	4	3
1, 2; 5, 6	74	Pharmacy	3	3	3	3
9, 10	74	Materia Medica	1	3	1	3
13, 14	74	Prescriptions	2		2	
9	61	Mineralogy	2			
5, 6	69	Zoology	2	2		
1, 2; 3, 4	59	Botany	2	2	2	2

Second Year

5, 6; 27, 28	64	Chemistry	3	6	3	6
3, 4; 7, 8	74	Pharmacy	2	6	2	6
1, 2; 3, 4	57	Physics	3	2	3	2
11, 12	74	Materia Medica	2	3	2	2
2, 4	65	Physiology				

The following excerpts from the "Manitoba Pharmaceutical Act" touching the matters of preliminary educational qualification, conditions of apprenticeship, etc., are appended:

THE PHARMACEUTICAL ACT
(4 Geo. V., Cap. 78, 1914)

* * * * *

15. Before any candidate shall be entitled to be registered as a certified apprentice he shall,—

(a) produce to the council satisfactory evidence of a good moral character;

(b) pass such examination or examinations as the council shall have prescribed or shall prescribe, or produce to the council satisfactory evidence of requisite knowledge.

16. Before any candidate shall be entitled to be registered as a certified clerk he shall,—

(a) produce to the council satisfactory evidence that he has actually served as a certified apprentice for at least two years to a licensed pharmaceutical chemist who has during such period been engaged in actual practice as a compounder of physicians' prescriptions;

(b) pass such examination (to be called the "minor examination") as the council shall have prescribed or shall prescribe, or produce to the council other satisfactory evidence of requisite knowledge and experience.

(2) No person shall be competent to be registered as a certified clerk unless he shall have attained the age of at least eighteen years.

17. Before any candidate shall be entitled to be registered as a licentiate pharmaceutical chemist he shall,—

(a) produce to the council satisfactory evidence that he has served at least two years as a certified clerk or at least four years as a certified apprentice to a licensed pharmaceutical chemist who has been during such periods respectively in actual practice as a compounder of physicians' prescriptions, and has attended such course of instruction as the council shall prescribe; time spent in attendance on a regular course of lectures and instruction in any college or school of pharmacy recognized and approved by the council shall be considered part of such periods of service respectively;

(b) produce to the council satisfactory evidence that he has passed the minor examination;

(c) pass such examination (to be called the "major examination") as the council shall have prescribed, or shall prescribe, or produce to the council other satisfactory evidence of requisite knowledge and experience.

(2) No person shall be registered as a pharmaceutical chemist who has not attained the age of twenty-one years.

19. The council may in its discretion accept the diploma or other authenticated certificate of examination of any other competent examining board out of the Province of Manitoba, or of the University of Manitoba, as sufficient evidence of qualification of any applicants to be registered under this Act as certified apprentice, certified clerk or pharmaceutical chemist respectively.

DEGREE IN PHARMACY

Bachelor of Science in Pharmacy

The University of Manitoba confers the degree of Bachelor of Science in Pharmacy. The following are the requisites for proceeding in course to this degree.

Matriculation

The requirements for Matriculation are the same as for Matriculation for Arts or Science (see the Matriculation Calendar).

FIRST YEAR

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
1, 2; 3, 4	33	English.....	4	....	4	....
1; 4; 5, 6	52	Mathematics.....	6	....	6	....
1, 2; 3, 4	57	Physics.....	3	2	3	2
1, 2; 21, 22	63	Chemistry.....	3(+1)	3	3(+1)	3
9	61	Mineralogy.....	2	....	....	....
		One of—				
5, 6	38	French.....	3	....	3	....
1, 2 or 3, 4; 5, 6	40	German.....	3	....	3	....

SECOND YEAR

9, 10; 17, 18	57	Physics.....	3	3	3	3
3, 4; 25, 26	63-64	Chemistry.....	3	6	3	6
1, 2; 3, 4	69	Zoology.....	2	2	2	2
1, 2; 7, 8	59-60	Botany.....	2	2	2	2
1, 2; 5, 6	74	Pharmacy.....	3	4	3	4
9, 10	74	Materia Medica.....	2	....	2	....
13, 14	74	Prescriptions.....	2	....	2	....

THIRD YEAR

7, 8; 11, 12; 33, 34	63-64	Chemistry.....	4	9	4	9
9, 10; 11, 12; 14	60	Botany.....	3	5	4	5
3, 4; 7, 8	74	Pharmacy.....	2	3	2	3
11, 12	74	Materia Medica.....	2	3	2	2

FOURTH YEAR

The Courses for this Year are yet to be outlined.

Courses in Pharmacy in Detail

DEPARTMENT OF PHARMACY

Henry E. Bletcher, B.Sc. (Phar.), F.C.I.C.....*Professor*

N.B.—For key to system of numbering courses, see page 4.

1, 2. Pharmacy I. First Term: An exposition of the principles on which pharmaceutical operations are based; the utilization of these processes for specific ends; the arithmetical calculations required in operative pharmacy; the historical development of pharmacy. Second Term: An extended consideration of the galenical preparations of the British Pharmacopoeia; the comparison of other important national pharmacopoeias with the British Pharmacopoeia. Three hours a week.

3, 4. Pharmacy II. The application of Chemistry to the preparation of medicines both inorganic and organic with especial reference to the British Pharmacopoeia; methods of manufacture; characters of pure products; possible impurities; tests. Study of unofficial chemicals of interest. Two hours a week.

5, 6. Practical Pharmacy I. This course includes practice in the physical operations used in pharmacy such as determination of weight, volume, temperature, specific gravity, melting point, boiling point, etc.; the study of simple heat phenomena; simple heat processes; filtration; evaporation, crystallization, etc.; distillation; dispensing of classes of preparations commonly prescribed by physicians; dispensing of difficult prescriptions; care of apparatus; methods of work. Three hours a week.

7, 8. Practical Pharmacy II. The preparation and purification of typical inorganic and organic chemical substances used as medicines; the manufacture of galenical preparations; the assay of selected preparations. Six hours a week.

9, 10. Materia Medica I. The detailed study of important organic drugs, particularly those of the British Pharmacopoeia; the principal facts relating to their sources, preparation, identification, purity, characteristics, constituents, storage and toxicology. One hour lecture; three hours laboratory a week.

11, 12. Materia Medica II. The study of the chemical nature of important classes of plant constituents including among others the organic acids, fixed oils, volatile oils, alkaloids, glucosides, tannins, carbohydrates; products of destructive distillation; fermentation products. Two hours a week.

13, 14. Prescriptions. This course includes the study of the Latin of Pharmacy, posology, prescription arithmetic, methods of compounding prescriptions, recognition and treatment of incompatibilities, the Pharmaceutical Act, and all other topics of the course in Pharmacy not specifically classified elsewhere. Two hours a week.

GENERAL REGULATIONS

REGISTRATION

The 1921-1922 session begins on Tuesday, September 13th, and lectures in Arts, Science, Medicine, Engineering, Architecture and Pharmacy open on Wednesday, September 14th.

Students who present themselves for registration at the Registrar's Office of the University later than 5 o'clock p.m., on Thursday, September 15th, will be required to pay the sum of \$2.00 in addition to their tuition fee, or, in case all their classes are taken in an affiliated college will be subjected to a fine of \$2.00.

No registration will be accepted after Monday, October 3rd, unless the Board of Studies on investigation finds that a special concession is warranted.

The dates for the registration of extra-mural students are the same as those for students in attendance, and the same regulations apply, except that extra-mural students are not required to register in person, but may do so by mail.

All undergraduates in Law must present certificates of registration from the University before registering in the Manitoba Law School.

EXAMINATIONS

General Regulations.

1. The regular examinations for undergraduates in Arts, Science, Engineering, Architecture and Pharmacy are given in part in December and in part in April of each academic year. The same applies to subjects of the First Year in Medicine taught in the University. All other regular examinations are given in April only. For definite information as to the work upon which each of these sets of examinations is based, the student is referred to the curricula of the various years as set forth elsewhere in this Calendar.

2. Examinations in Arts may be held at such outside centres in Manitoba, Saskatchewan, Alberta, and British Columbia, as the Board of Studies may from time to time approve of; it being understood that this does not apply to practical examinations, where such are required.

Matriculation Examinations.

1. The Examinations for Matriculation into all Faculties are held twice in each year, in the months of June and September.

2. The examinations in June are conducted by the Department of Education of Manitoba for the University, concurrently with its own examinations for Teachers' Certificates, and insofar as the requirements for the two courses correspond, the two groups of candidates write upon the same papers. The University determines its requirements for entrance and its standards of examination, the joint examiners are appointed by mutual agreement, and the Matriculation examination results are submitted to the Board of Studies, which determines whether each candidate passes or fails and, in case he passes, determines his grading.

These examinations are held in Winnipeg and at a large number of outside points in the province.

In addition, the June Matriculation Examinations are held by the

University on request at such points outside of Manitoba as may from time to time be approved by the Board of Studies.

3. The September Matriculation Examination is held at the University in Winnipeg only.

Credit for Term Work.

1. At the close of each term the instructors in Arts in the University and the affiliated colleges may make a report on the work of each student for the term just closing in the form of an award of marks, to be based upon the results of recitations, reports, essays, papers or interim examinations, or a combination of any number or of all of these tests, as indicating the character of the work throughout the term. The maximum credit allowed for term work in such a report shall be 20 per cent. of the total marks allowed for the subject or portion of the subject in question.

2. On the acceptance of the report of the instructor, the marks given for term work are added to the marks obtained at the written examination in the subject (for which the maximum shall be 80 per cent. of the total marks allowed for the subject or portion of the subject in question), and this total shall determine the standing of the student.

3. In case the instructor submits no report, or his report is not accepted by the Board of Studies for any reason, the standing of the student is determined entirely by the final written examination, which will be valued on the basis of the total marks allowed for the subject or portion of the subject in question.

4. In any case, the award of scholarships and medals is made entirely on the results of the final written examinations.

5. The marks for term work will be reported to the student by the Registrar when the marks given for his written examination are announced, but not before.

Failures and Supplementals.

1. For information regarding Matriculation failures and supplementals see Matriculation calendar.

2. An undergraduate student in Arts, Science, Engineering, Architecture or Pharmacy who has failed on any paper or papers at the December examinations may proceed with the work of the second term and may remove the condition or conditions at a supplemental examination given in April before the regular April examinations, and the mark or marks obtained at this supplemental examination will, if higher, replace the original mark or marks in computing the aggregate of the student for the year.

3. A student of the First or Second Years in Arts or Science or Senior Matriculation for Medicine or Engineering, who, at the close of the April examinations, has not more than six conditions against him, is granted standing for the year, with supplementals, provided his aggregate is at least 40 per cent. of the total maximum marks assigned to all subjects of his course.

4. In the case of examinations of the First and Second Years in Arts or Senior Matriculation for Medicine or Engineering, where the candidates are given hour-and-a-half papers in some subjects and three-hour papers in other subjects, the hour-and-a-half paper is the unit in determining failures. A failure in a three-hour paper is reckoned as two failures, unless the examiners recommend otherwise. Students are required to pass in both the term essay work and final term examination in the subject of English Prose and Composition.

5. A student taking one of the special group courses of the Third or Fourth Years in Arts, has his standing for the year determined by the combined results of the December and April examinations (supplemental and regular). He must obtain 40 per cent. of the aggregate of the marks allowed for each *major* or *minor* subject, in order to obtain standing in that subject; and as well 40 per cent. of the aggregate of the marks allowed for all subjects of his course in order to obtain standing on the course. Having failed to obtain 40 per cent. of the aggregate of the marks in any subject, he is required to repeat all the examinations in that subject as supplemental examinations. Having failed to obtain 40 per cent. of the aggregate of the marks in all subjects of the course, or having failed to obtain the pass mark in more than three papers, he is required to repeat all the examinations of the year at the regular examinations of a subsequent session. A student who has obtained at least 40 per cent. of the aggregate of the marks in all subjects of his course, and, as well, at least 40 per cent. of the aggregate of the marks in each subject of his course, and has failures registered against him in not more than three papers of the two examinations, is granted standing but is required to take supplemental examinations in the paper or papers in which he has still failed to secure the pass mark.

6. A student taking any other special course, or the General Course of the Third or Fourth Year in Arts or the Third or Fourth Year in Science, has his standing for the year determined by the combined results of the December and April Examinations (supplemental and regular). In order to secure a pass he must obtain at least 40 per cent. of the aggregate of the marks allowed for all examinations of his course, and may not, at the close of the April examinations, have more than three conditions registered against him (a failure on an hour-and-a-half paper operating to create only a half condition).

7. The pass in all undergraduate subjects in Arts is 40 per cent., both for extra-mural and intra-mural students.

8. Students in Engineering and Architecture, and in the First Year in Medicine have their standing for the year determined by the combined results of the December and April examinations. In order to secure a pass they must obtain at least 50 per cent. of the aggregate of the marks allowed for all examinations of their course. The conditions under which students will be allowed to proceed with the work of the second term, and the number of failures in individual papers that a student may make and yet be allowed standing on the combined results of the December and April examinations, with the privilege of supplementals, will be determined by the Board of Studies each year when the number of papers to be set by the examiners is definitely known.

9. Students of the Second, Third, Fourth and Fifth Years in Medicine and of all years in Law are examined only in April, and are granted standing provided they have failed in not more than two papers of the examination and have obtained at least 50 per cent. of the aggregate of the marks allowed for all papers of the examination, being required to take supplemental examinations in the papers in which they have failed.

10. The pass mark in all undergraduate subjects in Engineering and Medicine is 50 per cent. The pass mark in all professional subjects in Architecture is 50 per cent.; in other subjects 50 per cent. where they are given by the Engineering Faculty and 40 per cent. where they are given by the Arts Faculty.

11. The pass mark in all undergraduate subjects in Law is 40 per cent.

12. A student of the Diploma Course in Pharmacy, who, at the close of the April examinations, has not more than three conditions against him, is granted standing for the year, with supplementals, provided his aggregate is at least 60 per cent. of the total maximum marks assigned to all subjects of his course.

13. The pass mark in all professional subjects in Pharmacy is 60 per cent.; in the remaining subjects of the course 50 per cent.

14. The April Supplemental Examinations begin on the third Monday of the month and the September Supplemental Examinations begin on the first Thursday of the month, and run concurrently with the September Matriculation Examinations. For them, as for all other supplemental and special examinations, application should be made at least fifteen days in advance and on blank forms intended for the purpose, to be obtained from the Registrar.

15. The ordinary scale* of fees for Supplemental Examinations is as follows: One full paper (three hours), \$6.00; two full papers, \$7.00; three or more full papers, \$8.00; one half-paper (one and a half hours), \$3.00; 50 cents for each additional half-paper.

16. In all cases, students who are required to take a supplemental examination and who fail to present themselves for the same at the September examination following the regular examination at which the original failure was made, must, when they present themselves for examination at a later date, accommodate themselves to any changes in the curriculum that may have been made in the meantime.

17. A condition in any subject may also be removed by writing upon the paper provided in the subject in question at any regular examination where such paper is examined. In such a case the supplemental examination fee is required from the candidate whether or not he has paid at the same time the regular examination fee. He should also make application therefor on a special form provided for such cases by the Registrar.

18. September Supplemental Examinations are held at the University, and also at such outside centres in Manitoba, Saskatchewan, Alberta and British Columbia as the Board of Studies may from time to time approve.

Conditions of Examination.

1. Candidates for any supplemental or special examination should at least fifteen days before the date of the examination, make suitable application to the Registrar, from whom blank forms of application may be obtained. The required fee must accompany the application. The fee for a regular examination is payable (along with the tuition fee, if such is required) at the time of registration for class work.

2. (a) No student in Arts who has registered with an affiliated college shall be entitled to present himself at any regular University examination within the academic year in which he has so registered without the written consent and approval of the head or acting head of the college in which he is registered.

(b) No student in Arts who has registered only in the University shall be entitled to present himself at any regular University examination within the academic year in which he has so registered, without the written consent and approval of the Chairman of the University Faculty of Arts and Sciences.

*In the case of examinations of the First and Second Years in Arts and Science, and of Senior Matriculation, the hour-and-a-half paper is employed as the unit throughout a three-hour paper counting as two units. \$3.00 is charged for the first hour-and-a-half unit, and 50 cents for each additional hour-and-a-half unit, whether of half or full papers up to a maximum of \$8.00.

3. No one shall be permitted to present himself as an extra-mural student at any University examination in Arts above Matriculation without giving notice to the Registrar, and without receiving permission from the Board of Studies to appear as an extra-mural student.

4. Every extra-mural candidate at any examination shall, along with his application for examination, forward to the Registrar a certificate from some trustworthy person, that he is of good moral character.

Appeals.

1. Any candidate is at liberty to enter an appeal, within three weeks after the publication of the examination results in the public press, against the standing assigned him by the examiners and to request a revision of the marking of one or more of his papers.

2. The fee for such revision is \$2.00 for each paper. This fee is payable at the time the appeal is made, and in case the revision takes place, is not returnable, whether the original marking is sustained or not. When the revision is not granted the fee is returnable.

3. There is no special form of application for such revision.

Conditioned Students

1. Candidates for matriculation into the Faculties of Arts, Science, Engineering and Architecture who have failed in not more than two papers, or, having failed in three, have at a subsequent supplemental examination, passed in at least one of them, may, as conditioned students, proceed with their course with the view of subsequently obtaining full undergraduate standing. This regulation is subject to the limitations laid down in 3 below.

2. Candidates with undergraduate standing in Arts, Science, Law, Engineering and Architecture who have failed on not more than two papers at the First, the Second or the Third Year examinations, or who, having failed on more than two, have at a subsequent supplemental examination, reduced the number of their conditions to two, may as conditioned students proceed with their course with the view of subsequently obtaining full standing in their year. This regulation is subject to the limitations laid down in 3 below.

3. The following limitations are placed on the application of regulations 1 and 2 above:

(a) Matriculation conditions must be removed before the commencement of the Second Year, First Year conditions before the commencement of the Third Year, and Second Year conditions before the commencement of the Fourth Year.

(b) A student who, by virtue of regulations 1 and 2 above, proceeds to any examination with conditions from a previous examination still registered against him, and who at the close of the said examination has more than three conditions against him, while otherwise qualifying for a pass, will not immediately receive standing, but will have the same withheld, until, at a subsequent supplemental examination, he reduces the number of his conditions to such an extent and in such a way as to entitle him to proceed under 3 (a).

Equivalent Examinations

1. Provincial Department of Education examinations are accepted *pro tanto* by the University, in so far as the subjects and standing are, to the satisfaction of the Board of Studies, the same as, or equivalent to, those required by the University—but candidates offering certificates of having passed such examinations are required to pass in such subject or subjects not covered by their certificates, as may, in the opinion of the Board, be necessary for the completion of the examination for partial standing towards which such certificates are presented.

2. (a) The following are accepted *pro tanto* for subjects of Part I. of Arts or Science Matriculation, or Part I. of Junior Matriculation for Medicine or Engineering.

(1) Grade X. Teachers' Examination Certificate, Manitoba.

(2) Third Class Diploma, Saskatchewan, Alberta or British Columbia.

(3) Entrance to Model Schools Certificate, Ontario.

(b) The following are accepted *pro tanto* for subjects of Parts I. and II. of Arts or Science Matriculation or full Junior Matriculation for Medicine or Engineering:

(1) Grade XI. Teachers' Examination Certificate, Manitoba.

(2) Second Class Diploma, Saskatchewan, Alberta or British Columbia.

(3) Entrance to Normal Schools Certificate, Ontario.

(c) The following are accepted *pro tanto* for subjects of First Year in Arts or Science or of Senior Matriculation for Medicine or Engineering:

(1) Grade XII. Teachers' Examination Certificate, Manitoba.

(2) First Class Diploma, Saskatchewan, Alberta or British Columbia.

(3) Entrance to Faculties of Education Certificate, Ontario.

3. Provincial or Departmental Certificates for any other provinces of the Dominion are granted such *pro tanto* standing as the Board of Studies may from time to time recommend.

4. Candidates presenting *pro tanto* certificates must attempt to pass at one time in all the subjects necessary to the completion of the entire examination.

5. Holders of certificates of educational value, other than those above mentioned, receive such recognition as the Board of Studies may from time to time recommend.

6. Students of recognized colleges, who are matriculated in this University, may pursue their course of study in said college and may come up to the University examinations as students of said college.

Admission Ad Eundem Statum and Ad Eundem Gradum

Members of any other University in His Majesty's Dominions, or of any other University accredited by the University of Manitoba, who may apply for admission to this University, are not required to take the entrance Examination of the Faculty to which they belong, but may be admitted *ad eundem statum* or *ad eundem gradum*, on presentation of their credentials and payment of the required fee.

ATTENDANCE ON LECTURES AND PRACTICAL WORK.

No student who has not been duly registered as an extra-mural student, is allowed to present himself for examination in any subject in which class instruction is given, who does not present from the University Faculty, or from an affiliated college where such work is done in the college, a certificate of having attended 75 per cent. of the lectures delivered in that subject during the term preceding the examinations, in cases where December and April examinations are required, or during the entire session in cases where April examinations only are required.

No student is allowed to present himself for examination in any science subject or in mathematics unless he has satisfactorily carried out and recorded the minimum of practical work in each such subject decided upon by the University Faculties, subject to the approval of the Board of Studies; the scheme of practical work to be announced at the beginning

of each session. This regulation applies to all classes of students, whether of Arts, Science, Engineering, Medicine or Pharmacy, doing practical work under the direction of the University Faculties.

Students are permitted to register for extra-mural study of any course in Arts that does not involve practical or laboratory work. The regulations with respect to time of registration, etc., are the same as for students in attendance. Such students take the same examinations as those in the regular classes of instruction of the University or affiliated colleges, and the same time-table applies. Arrangements for local supervision of examinations may be made at the discretion of the Board of Studies.

***PRIZES AND SCHOLARSHIPS**

The Prizes and Scholarships hereinafter mentioned are provided from an endowment fund presented to the University under the terms of the will of the late Dr. A. K. Isbister.

***Prizes**

Prizes shall be awarded at the June examinations of each year for Part I. Matriculation to pupils of any school, not being an affiliated college, in the Province, as follows:

(a) These prizes to be called Isbister Prizes, shall be five in number of the value of \$20.00 each, and shall be awarded to the five candidates standing first on the aggregate of the marks of all papers on the fixed subjects of Part I. of the Matriculation Examination for Arts, Science or Law of the University of Manitoba, or on the corresponding subjects of Part I. of the Junior Matriculation for Medicine or Engineering.

One of these prizes shall be awarded to French-speaking students. In the event, however, of no French-speaking student qualifying for a prize, all five prizes may be awarded to English-speaking candidates.

(b) The winner of each of these prizes must send in to the Registrar of the University a certificate of his having been in attendance at a public or private school, not being an affiliated college, in the Province of Manitoba, for the greater part of the preceding school year.

SCHOLARSHIPS

Scholarships shall be awarded as follows:

Matriculation for Arts and Science and

Junior Matriculation for Law, Medicine and Engineering

Five Scholarships of \$100.00 each on aggregate of entire Grade XI Examinations.

Arts, Science and Senior Matriculation

First Year

Eleven Scholarships of \$100.00 each on the aggregate of the entire examination of the year, as follows: Six in Arts; two in Senior Matriculation for Medicine; two in Senior Matriculation for Engineering; one in Science. Two Scholarships of \$50.00 each in Latin Philosophy as follows: One for English-speaking students and one for French-speaking students.

Second Year

Six Scholarships of \$100.00 each on the aggregate of the entire examination of the year, as follows: Five in Arts; one in Science. Two Scholarships of \$50.00 each in Latin Philosophy as follows: One for English-speaking students and one for French-speaking students.

* As the University Council is considering at the time of publication of this calendar the question of the withdrawal of these prizes, the Council reserves the right to withdraw them without further notice.

Third Year

Seventeen scholarships of \$100.00 each, as follows: One in each of the following courses—General Course; Major Course in Greek, Latin, Hebrew, English, French, German, History, Political Economy; full course in Philosophy, Latin Philosophy and Mathematics: one in each of the four divisions of the Natural and Physical Science Course; one in Science.

Law

Two scholarships of \$100.00 each in the First Year and two scholarships of \$100.00 each in the Second Year.

Medicine

Twelve scholarships, as follows: One scholarship of \$125.00, one scholarship of \$100.00 and one scholarship of \$75.00 in each of the first four years of the Course.

Engineering

Eight scholarships as follows: One scholarship of \$100.00 and one scholarship of \$75.00 in each of the following—First Year; Second Year; Third Year Civil Engineering, Third Year Electrical Engineering.

Agriculture

One scholarship of \$100.00 in the Third Year and one scholarship of \$100.00 in the Fourth Year.

Home Economics

One scholarship of \$100.00 in the Third Year and one scholarship of \$100.00 in the Fourth Year.

GENERAL CONDITIONS OF ELIGIBILITY TO RECEIVE SCHOLARSHIPS.

1. A student is not qualified to receive a scholarship unless:—

(a) He has been ranked above all competitors on the aggregate of the marks in the subject or subjects for which the scholarship is given, or, in cases where more than one scholarship is offered, is one of a group that has been so ranked, or has become eligible through reversion (see below).

(b) He has obtained first-class standing on the aggregate of the marks in the subject or subjects for which the scholarship is given;

(c) And has passed at the same examination* in all the subjects required for the full work of the academic year in which the scholarship is given;

(d) And has removed at the same examination, or prior to it, any condition from a previous year or grade that may have been registered against him.

2. No student may hold more than one scholarship. If a student succeeds in otherwise qualifying for more than one scholarship in any year, he will be allowed to receive but one, and his name will be entered upon the list as having qualified for the other, though not entitled to any of the funds; and such other scholarship will be granted to the one ranking next to him, provided he is otherwise eligible.

* A failure or failures on December Examinations in undergraduate subjects of the First or Second Year in Arts, on which supplemental examinations are successfully passed in April, will not operate to debar the student concerned from receiving a scholarship, should he otherwise qualify, unless the subject in which the failure occurs be one of the group on which the scholarship is awarded.

A failure or failures on December Examinations in subjects of the First or Second Year in Engineering, on which supplemental examinations are subsequently passed in April, will not operate to debar the student concerned from receiving a scholarship, should he otherwise qualify. In the Third and Fourth Years in Arts or Engineering a failure on a December examination in any subject of the year, will operate to debar the student concerned from receiving a scholarship on that year's work, even if a supplemental examination in the subject in question is later successfully passed.

3. A student is not qualified to receive an Isbister prize at the examination of Part I Matriculation unless—

(a) He has obtained first-class standing on the aggregate of the subjects for which the prize is given;

(b) And has passed at the same examination in all subjects required for the full examination of Part I Matriculation.

CONDITIONS GOVERNING THE PAYMENT OF ISBISTER SCHOLARSHIPS

The general conditions governing the payment of these scholarships are determined by the terms of the will under which the trust was established, from which the following is an excerpt:

"I desire it to be understood that I establish this trust for the benefit and improvement of education in the Province of Manitoba, and it is my wish that it shall take the form of a general scholarship or prize fund for the encouragement of meritorious students and scholars in the various places of education in the Province for both sexes, from the Common School to the Colleges and Institutions and Private Schools where the highest education is given without any distinction of race, creed, language or nationality. In the Lower Schools this encouragement may take the form of prizes, and in the Higher Schools that of scholarships of sufficient value to maintain or help to maintain the holder at a College or University either in Canada, Great Britain or elsewhere, and I leave the Governing Body of the Manitoba University free to carry out the objects of the trusts now confided to them in the manner which to them may seem best."

The scholarships are paid during the course of the annual session following that at the examinations of which they were won, provided the winners are duly enrolled and regularly in attendance at the University or an affiliated college, upon the full work of the next succeeding year of the degree course they have begun, and payment is made upon the following plan: One moiety on the second Monday in November and one moiety on the second Monday in February, upon receipt by the Bursar of certification as to the award of the scholarship and as to compliance with the above requirements of registration and attendance from the Registrar and the President in the case of students registered for instruction in the University, and from the Registrar of the University and the head of the College in question in the case of students registered for instruction in an affiliated college.

If, for any reason, the winner of a scholarship is not in attendance as an intra-mural student during the academic year next following that in which the scholarship is won, the scholarship will automatically be extended for another year.

If, for any reason, the winner of a scholarship is not in attendance during the two academic years next following that in which the scholarship is won, the scholarship will lapse.

The values stated for the scholarships are the maximum values which the scholarships will not exceed. If the funds do not allow of the scholarships being of such maximum value, then they shall be proportionately of such value as the funds will allow.

AIKINS SCHOLARSHIPS IN THE ENGLISH LANGUAGE AND LITERATURE

Sir James Aikins, Lieutenant-Governor of Manitoba, and formerly for many years a member of the Council of the University and its Honorary Bursar, has established a trust for the purpose of providing annually what are to be known as the Aikins Scholarships in the English Language and Literature. They are to be awarded to the students

ranking first at the annual examinations in English of the First Year, the Second Year and the major course of the Third Year respectively, and are to have the same conditions attached as are attached to the Isbister Scholarships with respect to first class standing in the subject, concurrent completion of a full course of study of the year in question and freedom from prior conditions. They will be paid during the next succeeding annual session upon the same plan as that of the Isbister scholarships. The amounts have been fixed for the present at the following:

First Year.....	\$ 75.00
Second Year.....	75.00
Third Year, major course.....	125.00

MATRICULATION SCHOLARSHIP IN CHEMISTRY

A scholarship in Chemistry of amount \$50.00, has been established by the Chemical Society of Winnipeg for annual award at the examination for Junior Matriculation (Grade XI.), under the same conditions as those outlined for the Isbister Scholarships.

RESEARCH PRIZE IN SCIENCE

A research prize in Science is offered by the Scientific Club of Winnipeg annually for the best piece of research work in science, pure or applied, completed in the year preceding, carried out at the University of Manitoba by an undergraduate or by a graduate of not more than four years standing. The following rules will apply in the awarding of this prize:

1. The prize shall be known as the Research Prize of the Scientific Club of Winnipeg, and shall be of the value of \$300.00.

2. The prize shall be awarded at the Convocation Ceremony of May, 1922, for the best piece of research work in Science (pure or applied) carried out by an undergraduate or graduate of the University of Manitoba (excluding *ad eundum* graduates) who shall not have graduated prior to 1918. In the event of a student having proceeded to a subsequent degree or degrees in this University, the date of his last graduation will be chosen for the purpose of this clause.

3. In the event of no work of sufficient merit being submitted, the prize shall be awarded at a later date under conditions to be announced.

4. Candidates shall deposit three copies of published papers or of a full report properly typewritten of the research to be submitted with the Registrar of the University on or before April 1st, 1922.

5. The award will be made by the University Council on the nomination of the Scientific Club of Winnipeg, who shall exact a sufficient standard of merit before making any nomination. The standard of merit aimed at shall be worthiness of acceptance for duly accredited journals devoted to publication of research.

Addendum: The Scientific Club hopes that if the standard of work submitted is of sufficiently high value to justify a continuance of the prize, a further award may be made under similar conditions in 1926.

PRIZE OF THE MANITOBA BRANCH OF THE CANADIAN INSTITUTE OF MINING AND METALLURGY

The Manitoba Branch of the Canadian Institute of Mining and Metallurgy has voted a sum of money not to exceed \$100.00 to be presented as a prize to an undergraduate studying Science in the University of

Manitoba for the best paper dealing with a mining subject or a geological subject related to mining. The following rules will apply in the awarding of this prize:

1. The prize will be known as "The Prize of the Manitoba Branch of the Canadian Institute of Mining and Metallurgy."

2. Undergraduates of the University of Manitoba who are studying science are eligible to compete.

3. The prize will be awarded for the best paper dealing with mining or mining geology. Preference will be given to papers based on the results of field work or laboratory research, conducted by the candidate.

4. The prize has a maximum value of \$100 which may be reduced at the discretion of the committee in charge to \$50. The committee need not make an award if none of the papers submitted is considered of sufficient merit.

(5) Candidates must submit three copies of their paper to the secretary of the Manitoba Branch of the Institute on or before April 1st, 1922, and it is suggested that subjects should be submitted to the committee for approval before commencing work.

THE McMILLAN FELLOWSHIP IN HISTORY AND POLITICAL SCIENCE

A fellowship in History and Political Science of amount \$500.00 will be awarded annually to a graduate of the University of Manitoba who has obtained a creditable standing in History and Political Science (including Economics), and who will register for graduate work in this field in the University of Manitoba, or in another approved University. The award will be made by a committee consisting of the Chancellor, the President and four members named by the Board of Governors. Application should be made to the Registrar.

HUDSON'S BAY COMPANY RESEARCH FELLOWSHIP

This Fellowship is offered annually by the Hudson's Bay Company for research in pure or applied science. The following regulations will govern the appointment to this Fellowship:

1. The Fellowship shall be known as the Hudson's Bay Company Research Fellowship, and shall be tenable at the University of Manitoba.

2. An appointment will be made annually, if a suitable candidate is nominated, by the Council of the University of Manitoba, and confirmed by the Governor of the Hudson's Bay Company, for the ten years, 1920-29, inclusive.

3. In the event of no suitable candidate presenting himself, two Fellows may be appointed in the succeeding year.

4. The Fellowship is of the annual value of \$1500.00, and will be paid in four instalments on presentation of satisfactory reports on the work of the Fellow from the Head of the Department in which he is working. At least nine calendar months' work at the University of Manitoba must be completed before the payment of the last instalment.

5. The appointments are open to graduates (excluding *ad eundem* graduates) of any Canadian University.

6 Each Fellowship will be tenable for a period of one year, and will be renewed for a further period only in a very exceptional case.

7. Each Fellowship may be held in any branch of pure or applied science (*i.e.*, the Natural and Physical Sciences, the Medical Sciences, Engineering, and Agriculture).

8. A candidate should adduce special qualifications in the subject in which he desires to carry on research. Published papers or evidence of completed research will be regarded as one evidence of such qualifications.

9. The entire time of the Fellow must be devoted to original research carried out under the general control of the Head of the Department in which he elects to work.

10. The nomination will be made by the Fellowship Committee of the Scientific Club of Winnipeg, in conjunction with the Chancellor and President of the University of Manitoba.

11. The regulations will be circulated to all the Canadian Universities, and other bodies likely to be interested, in January of each year. The applications must be in the hands of the Registrar of the University of Manitoba by April 1st of each year, and the appointment will be made on or about May 1st of each year. The Fellow will be required to commence his work at the University of Manitoba not later than the opening of the following session.

CLIFFORD MOIR PRIZE

A money prize of \$100.00 given by Mr. J. J. Moir of Killarney, Man., in memory of his son the late Clifford James Moir, B.A., 1916, who gave his life in his country's service, June 30th, 1918, while a member of the Royal Air Force, is offered for competition each year among students graduating in Division D of the Course in Natural and Physical Science. The award of the money prize will be accompanied by the granting of a parchment certificate. The usual conditions of eligibility demanded for a gold medal will be exacted.

TRAVELLING SCHOLARSHIP

The sum of \$600.00 is given annually from the revenue of the Isbister Trust for the maintenance of a Travelling Scholarship, to be awarded under the following conditions:

1. The object of the Travelling Scholarship is to assist students who have completed their Final Year in the University to pursue the special line of studies which they have selected, at some other University or seat of learning.

2. No student may hold a Travelling Scholarship for a longer period than two years; and no student who has once held such a scholarship may be eligible a second time.

3. Those eligible to compete for the scholarship are students who have graduated not more than twelve months previously, at the regular spring examination, in one of the special courses in Arts, or in the course in Medicine or Engineering.

4. One Travelling Scholarship is offered for competition in every alternate year, or oftener if a scholarship be vacant; and the course in which it is offered is decided by rotation in the following order:—The special course in Classics, the special course in Mathematics, the special course in Modern Languages, the special course in English Philosophy, the special course in Latin Philosophy, the special courses in Science, the course in Medicine, the courses in Engineering.

The course in which it is proposed to award it shall be announced in the Calendar of the year previous.

5. The scholarship is awarded to the student obtaining the highest marks at a special examination in the subjects of the selected course, the date and place of holding which is announced in the Calendar of the year previous; provided always that the scholarship shall not be awarded to any student who shall not have (a) obtained first class standing at the special examination, and (b) obtained first class standing and have passed in all subjects of his final examination. If these conditions be not satisfied the scholarship may, if the Board of Studies deem it advisable, be offered under similar conditions in the subjects of the course next in rotation.

6. The place at which the successful student shall pursue his studies shall be selected by the student, subject to the approval of the Board of Studies.

7. The scholarship is of the yearly value of \$600.00, and the amount is paid each year in two moieties; provided that the second moiety in each year shall not be paid until the student shall have spent at least three months in studying at the institution selected, and shall have produced a certificate from the authorities of the institution of his having made satisfactory progress.

A special Travelling Scholarship Examination is held in June, at a date announced by the Registrar. Applications for this examination should be forwarded to the Registrar thirty days in advance.

The scholarship will be open for competition in the year 1923 to students who have graduated in that year or the previous year in Engineering.

THE RHODES SCHOLARSHIPS

By the will of the late Mr. Cecil Rhodes, a scholarship of the value of £300 yearly, tenable at any college in the University of Oxford for three consecutive academical years, has been allotted to the Province of Manitoba. Nominations to the scholarship are made by a committee of former Rhodes scholars now resident in Manitoba, under the chairmanship of Mr. Justice Perdue. The secretary of the committee is Professor Chester Martin of the University Arts Faculty. One appointment is made by the trustees in each year. Nomination of the 1922 scholar will be made in November, 1921. For a form of application request should be made to the secretary of the committee.

The following information as to the requirements and procedure in connection with appointments to Rhodes scholarships, as hitherto prevailing, is appended:

In order to be eligible for nomination to this scholarship, candidates—

(a) Must be British subjects, with at least five years' domicile in Canada, and unmarried.

(b) Must have spent four years in Manitoba educational institutions, two at least of which must have been as registered undergraduates of the University of Manitoba.

(c) Must have passed their nineteenth, but not have passed their twenty-fifth birthday, on October 1st of the year for which they are elected.

The University of Manitoba has been admitted by the University of Oxford to the privileges of the Statute on Colonial and Indian Universities. This statute relieves its students of a certain standing from the requirements of Responsions (the first public examination exacted by the University of Oxford from each candidate for a degree), providing a sufficient knowledge of the Greek language has been shown. It also admits to Junior or Senior status, as follows:—

(a) Any member of a University so admitted, who shall have pursued a course of study prescribed by it and extending over two years, and who shall have passed all the examinations incident to the course, may be admitted to the status and privileges of a Junior Colonial or Indian Student.

(b) Any member of a University so admitted, who shall have pursued a course of study prescribed by it and extending over three full years, and who shall have taken honors in the final examination incident to the course, may be admitted to the status and privileges of a Senior Colonial or Indian Student.

Candidates for the scholarship, therefore, who have satisfied the condition of eligibility which requires a record of at least two years of undergraduate work in the University of Manitoba, are relieved of the necessity of passing a preliminary or qualifying examination, provided they hold standing in Greek equivalent at least to that of the Second Year in Arts.

If the University of Manitoba did not enjoy this privilege under the Statute on Colonial and Indian Universities, or if the two years of undergraduate work of the prospective candidate were not sufficient to relieve him from Responsions, a qualifying examination would be held prior to the election.

This examination is not competitive, but is intended to give assurance that all candidates are fully qualified to enter on a course of study at Oxford University. It is therefore based on the requirements for Responsions. Rhodes scholars may be selected from candidates who have successfully passed this preliminary examination.

Candidates must offer the following:—

(1) Arithmetic—the whole.

(2) Either Algebra—

Addition, Subtraction, Multiplication, Division, Greatest Common Measure, Least Common Multiple, Fractions, Extraction of Square Root, Simple Equations containing one or two unknown quantities, and problems producing such equations.

Or the Elements of Geometry—

Elementary Questions, including propositions enunciated by Euclid, and easy deductions therefrom, will be set on the subject-matter contained in the following portions of Euclid's Elements, viz.:—

Book I.—The whole, excluding propositions 7, 16, 17, 21.

Book II.—The whole, excluding proposition 8.

Book III.—The whole, excluding propositions 2, 4 to 10, 13, 23, 24, 26 to 29.

Any method of proof will be accepted which shows clearness and accuracy in geometrical reasoning. So far as possible, candidates should aim at making the proof of any proposition complete in itself. In the case of propositions 1 to 7, 9, 10 of Book II., algebraical proofs will be allowed.

(2) Greek and Latin Grammar.

(3) Translation from English into Latin prose.

(4) Greek and Latin Authors.

Candidates must offer two books, one Greek and one Latin or Unseen Translation.

The following portions of the undermentioned authors will be accepted:—

Demosthenes—De Corona.

Euripides—Any two of the following plays: Hecuba, Medea, Alcestis, Bacchae.

Homer—(1) Iliad 1—5, or 2—6; or (2) Odyssey 1—5, or 2—6.

Plato—Apology and Crito.

Sophocles—Antigone and Ajax.

Xenophon—Anabasis—1—4, or 2—5.

Caesar—De Bello Gallico, 1—4.

Cicero—(1) the first two Philippic Orations; or (2) the first three Catiline Orations, and In Verrem, Act. I; or (3) the Orations. Pro Murena and Pro Lege Manilia; or (4) the treatises, De Senectute and De Amicitia.

Horace—(1) Odes 1—4; or (2) Satires; or (3) Epistles.

Livy—Books V, VI.

Vergil—(1) the Bucolics, with Books 1—3 of the Aeneid; or (2) the Georgics; or (3) the Aeneid, Books 1—5, or 2—6.

The texts used in setting the examination papers will be those of the Series of Oxford Classical Texts, so far as these have been published by the Oxford University Press.

Papers covering this range of study will be prepared by examiners appointed by the Trustees, and will be sent to each centre, where required, and at a date publicly announced, the examination will be held under proper supervision, and the papers returned to the examiners. A list of those who have successfully passed this test will, as soon as possible, be furnished the Committee of Selection, and from this list, and a list of other eligible candidates, the Committee will proceed to elect the scholar.

Candidates for the scholarship should, during the month of December, notify the Secretary of the Committee of Selection of their intention of becoming such candidates, forwarding at the same time a detailed statement of their record, proof of all matters necessary to establish their eligibility, and a list of references with whom the Committee of Selection may communicate respecting their fitness for appointment. The decision of the Committee of Selection is final.

The following extract from the will of the late Right Hon. Cecil John Rhodes serves to indicate some of the considerations taken into account in elections to this scholarship:

"My desire being that the students who shall be elected to the scholarships shall not be merely bookworms, I direct that in the election of a student to a scholarship regard shall be had to (1) his literary and scholastic attainments; (2) his fondness of and success in many outdoor sports, such as cricket, football and the like; (3) his qualities of manhood, truth, courage, devotion to duty, sympathy for and protection of the weak, kindliness, unselfishness and fellowship; and (4) his exhibition during school days of moral force of character and of instincts to lead and to take an interest in his schoolmates; for those latter attributes will be likely in after life to guide him to esteem the performance of public duties as his highest aim. As mere suggestions for the guidance of those who will have the choice of students for the scholarships, I record that (1) my ideal qualified student would combine these four qualifications in the proportions of three-tenths for the first, two-tenths for the second, three-tenths for the third, and two-tenths for the fourth qualifications, so that according to my ideas, if the maximum number of marks for any scholarship were 200, they would be apportioned as follows: 60 to each of the first and third qualifications and 40 to each of the second and fourth qualifications; (2) the marks of the several qualifications would be awarded independently as follows (that is to say) the marks for the first qualification by examination, for the second and third qualification respectively by ballot by the fellow-students of the candidates, and for the fourth qualification by the head master of the candidate's school; and (3) the results of the awards (that is to say, the marks obtained by each candidate for each qualification) would be sent as soon as possible for consideration to the trustees or to some person or persons appointed to receive the same, and the person or persons so appointed would ascertain by averaging the marks in blocks of 20 marks each of all candidates the best ideal qualified students."

No student shall be qualified or disqualified for election to scholarship on account of his race or religious opinions.

The Committee of Selection is asked to furnish to the Trustees as full a statement as possible of the school and college career of each elected scholar, with the special grounds of his appointment, together with suggestions, if desired, as to the course of study for which he is best fitted.

A qualified student who has been elected as aforesaid shall within six calendar months after his election, or as soon thereafter as he can be admitted into residence, or within such extended time as the Trustees shall allow, commence residence as an undergraduate at some college in the University of Oxford. The scholarship is payable to him from the time when he commences such residence.

Any inquiries about Oxford, its colleges and the courses of study there, should be addressed to F. J. Wylie, Esq., the Oxford agent of the Rhodes Trustees.

Copies of Oxford Responsion papers for past years can be obtained from the Copp, Clark Company, Toronto. The Student's Handbook of Oxford can be ordered at the same address. It gives full information about the examinations of the University, subject to changes made since the last edition was issued. "Oxford As It Is," a small pamphlet prepared by Mr. Louis Dyer, of Harvard and Balliol Colleges, for the use of American candidates, gives all essential information in a condensed form. It can also be ordered from the Copp, Clark Company, Toronto. "Oxford and Its Colleges," written by Mr. J. Wells, of Wadham College, and "Oxford and Oxford Life," edited by the same gentleman, may be recommended to those who wish to gain full information about the University and its Colleges.

PRIZES IN MEDICINE

Two microscopes, known as "The Chown Prizes in Medicine," provided from the revenue of a fund created by the Faculty of Manitoba Medical College, are awarded each year to the two students of the Fifth Year in Medicine who have obtained the highest standing in Medicine and in Surgery respectively, of the Fourth and Fifth Years. Both theoretical and clinical examinations are taken into account.

MEDALS

(a) The Governor-General's Medal.

The Governor-General's *Gold Medal*, the gift of his Royal Highness the Governor-General is awarded annually to the student of the Third Year in Arts ranking highest on the aggregate of the examinations of the full course of the first three years in Arts.

(b) University Medals.

A *Gold Medal* is awarded annually to the student standing first in order of merit at the final examination of each of the following courses or subjects in Arts, provided his standing on the aggregate of the marks be 80 per cent. or above: *General Course; Philosophy (English); Philosophy (Latin); Mathematics; Natural and Physical Science; Greek major; Latin major; Hebrew major; English major; French major; German major; History major; Political Economy major.

Gold Medals are awarded annually to the students standing first in order of merit at the final examinations in Civil Engineering and in Electrical Engineering, provided their standing on the aggregate of the marks be 80% or above.

A *Gold Medal* is awarded annually to the student standing first in order of merit in the final examination of the course in Medicine, provided his standing on the aggregate of the marks be 80 per cent. or above.

A *Gold Medal* is awarded annually to the student standing first in the order of merit in the final examination of the course in Law, provided his standing on the aggregate of the marks be 80 per cent. or above.

*In the award of the medal in the General Course, all five subjects shall be taken into account, according to the following method: The percentage of the highest candidate in each subject shall be raised to 100, and that of each of the other candidates in proportion, and the medal awarded on the basis of these raised percentages.

(c) Special Medals.

A *Gold Medal*, presented by Mr. J. Lonsdale Doupe, in memory of his father, Mr. Joseph Doupe, is awarded annually to the student obtaining the highest first-class standing on the Third and Fourth Year Examinations of the course in Civil Engineering.

A *Gold Medal*, presented by Dr. Edith M. Ross, in memory of her grandmother, Dr. Charlotte W. Ross, is awarded annually to the student of the Fifth Year in Medicine obtaining the highest standing in Obstetrics and Pediatrics of the Fourth and Fifth Years.

DEGREES IN ABSENTIA

No degree will be conferred *in absentia* except where good reasons for absence have been submitted to, and approved by the Board of Studies, or the Council, and an additional fee of ten dollar may be exacted in each case where permission is granted.

GRADING OF DEGREES

All degree diplomas granted by the University are graded as follows: *rite*, indicating standing between the pass mark and 66 per cent. inclusive; *cum laude*, indicating standing between 67 per cent. and 79 per cent., inclusive; *magna cum laude*, indicating standing of 80 per cent. and above.

UNIVERSITY DRESS

No undergraduate student shall present himself at any University Examination, or at any meeting of the University, unless he be clothed in the academic dress peculiar to his college.

The materials and colors prescribed by the Council for the hoods to be worn by graduates of the University are as follows:—

B.A.—Black stuff, edged with white rabbit skin, with a braid of green silk.

M.A.—Black corded silk, lined with scarlet corded silk.

M.D.—Black cashmere, lined with purple corded silk.

M.D., C.M.—Black cashmere, lined with purple corded silk and edged with violet silk.

LL.B.—Black silk stuff, lined with white silk, edged with narrow white rabbit skin, and narrow green silk braid along the border

B.S.A.—Black, lined with green, and edged with white rabbit-skin.

B.H.Ec.—To be determined.

B.Sc. (Phar.)—Black, lined with light blue and edged with white rabbit-skin.

B.Sc. (C.E.)—Black, lined with yellow and edged with white rabbit-skin.

M.C.E.—Black, lined with yellow.

B.Sc. (E.E.)—Black, lined with yellow and edged with white rabbit-skin.

M.E.E.—Black, lined with yellow.

B.M.E.—Black, lined with yellow and edged with white rabbit skin.

B.Sc.—Black, lined with gold yellow and edged with white rabbit skin.

LL.D.—Scarlet cloth lined with white moire silk.

FEES

The following fees are required and must be paid to the Accountant of the University in advance. Regular Examination fees are payable at the time of registration, degree fees not later than the last date for payment of second term tuition fees. Supplemental examination fees are payable at the time application for the examination is made. The fees for admission *ad eundem statum* or *ad eundem gradum* are payable at the time application therefor is made.

Matriculation Examinations.

For Matriculation (Part I.).....	\$ 3.00
For Matriculation (Part II.).....	4.00
For Matriculation (Parts I. and II.).....	6.00
For Matriculation by subjects, each subject.....	2.00

For Part I. Matriculation Supplemental Examination—

One subject.....	\$ 2.00
Two or more subjects.....	3.00

For Part II. Matriculation Supplemental Examination—

One subject.....	\$ 6.00
Two subjects.....	7.00
Three subjects.....	8.00

This scale of fees applies to the September examinations only. The June Matriculation Examination fees are payable to the Department of Education, and are on a scale fixed by the Department.

Examinations Above Matriculation.

For each Regular Annual Examination (payable at the time registration for the year's work is made).....	\$ 8 00
For each Supplemental Examination*—	
One subject.....	\$ 6.00
Two subjects.....	7.00
Three subjects.....	8.00
Examination for License to Practise Medicine.....	15.00

Registration

Registration (payable the first time a student registers in any Faculty).....	\$2.00
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Tuition

For Arts and Science and Senior Matriculation Students—

A full course, any year.....	\$36.00
A single subject (without laboratory work) (First and Second Years or General Course Third and Fourth Years).....	8.00
A single subject as above, with laboratory work.....	10.00
A major subject, Third and Fourth Years.....	18.00
A minor subject, Third and Fourth Years.....	9.00

For Students in Engineering and Architecture—

First year.....	\$55.00
Second Year.....	65.00
Third Year, any course.....	80.00
Fourth Year, any course.....	80.00

*For further details see page 78.

For Students in Pharmacy—
Any year.....\$75.00

For Students in Medicine—
First and Second Years.....\$150.00
Third, Fourth and Fifth Years.....160.00

(The tuition fee of each special student is determined by the Dean of the Faculty concerned after consultation with the Professor in whose department the student receives instruction.)

Payment of Second Term tuition fees may be deferred to first week of the Second Term, but only on the basis of a slightly higher tuition fee as follows.

Per Term in
Instalments

Arts, Science and Senior Matriculation.....\$20.00

Engineering and Architecture—

First Year.....30.00

Second Year.....35.00

Third and Fourth Years.....42.50

Medicine—

First and Second Years.....80.00

Third, Fourth and Fifth Years.....85.00

Degrees

For the Degree of B.A.....\$10.00

For the Degree of M.A.....10.00

For the Degree of LL.B.....10.00

For the Degree of B.Sc. (Phar.).....10.00

For the Degree of M.D.....10.00

For the Degree of C.M.....15.00

For the Degree of B.Sc. (C.E.).....10.00

For the Degree of B.Sc. (E.E.).....10.00

For the Degree of M.C.E.....20.00

For the Degree of M.E.E.....20.00

For the Degree of B.Sc.....10.00

For the Degree of M.Sc.....10.00

For the Degree of B.Arch.....10.00

For the Degree of B.S.A.....10.00

For the Degree of B.H.Ec.....10.00

For the conferring of any Degree *in absentia* (for which the consent of the Board of Studies or the University Council must be secured), an additional fee of.....10.00

For admission *ad eundem statum*.....5.00

For admission *ad eundem gradum*.....10.00

Appeals

Each paper.....\$ 2.00

Special

For a Certificate of Standing.....\$ 2.00

For a Statement of Marks, on request.....1.00

For a Complete Bound Set of Examination Papers.....1.00

Caution Money

Arts students in the special courses in Mathematics and Natural and Physical Science, Science students and students in Engineering and Architecture, and all others taking practical or laboratory classes in the University, are required to deposit with the Accountant at the beginning of each session the sum of \$5.00. Against this will be assessed the value of all apparatus broken or materials wasted in any way other than in the legitimate course of class work, and the balance will be refunded at the close of the term. All other students make a caution money deposit of \$2.00.

APPENDIX I.

THE UNIVERSITY LIBRARY

Frank Emmett Nuttall, M.A., Librarian

The main library occupies three rooms in the old Law Courts, of which the main reading room was formerly the library of the Law Society. The total number of volumes may be estimated at 29,000, and the annual accessions are about 2,000 volumes. The nucleus of the collection was that portion of the Isbister library which escaped destruction by fire, but the greater part of it has been acquired during the past ten years by purchase or by gift.

The following periodicals are received by the University:

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| Action Française | Bookman (English) |
| Aeronautics | Botanical Abstracts |
| Agricultural Gazette of Canada | Botanical Gazette |
| Agricultural Research Institute, Pusa: | Brain |
| Bulletin | Bulletin of the American Mathematical Society |
| American Architect | Bulletin Astronomique |
| American Economic Review | Bulletin of the Bureau of Education (Department of the Interior, U.S.A.) |
| American Historical Review | Bulletin of the Geological Society of America |
| American Journal of Anatomy | Bulletin of the National Tax Association |
| American Journal of Archaeology | Bulletin de la Société Chimique de France |
| American Journal of International Law | Canadian Bookman |
| American Journal of Mathematics | Canadian Chemical Journal |
| American Journal of Pharmacy | Canadian Engineer |
| American Journal of Philology | Canadian Field Naturalist |
| American Journal of Physiology | Canadian Finance |
| American Journal of Science | Canadian Forum |
| American Journal of Semitic Languages and Literatures | Canadian Historical Review |
| American Mathematical Monthly | Canadian Journal of Mental Hygiene |
| American Mineralogist | Canadian Machinery |
| American Naturalist | Canadian Magazine |
| Anatomischer Anzeiger | Canadian Mining Journal |
| Ancient Egypt | Canadian Municipal Journal |
| Anglia | Canadian Railway and Marine World |
| Anglia: Beiblatt | Car, The |
| Annalen der Physik | Centralblatt für Mineralogie, Geologie und Palaeontologie |
| Annales de Chimie | Century |
| Annales de Physique | Chemical Age |
| Annals of the American Academy of Political and Social Science | Chemical and Metallurgical Engineering |
| Annals of Archaeology and Anthropology | Chemical News |
| Annals of Botany | Chemisches Zentralblatt |
| Annals of Mathematics | Clarkson Bulletin |
| Architectural Forum | Classical Journal |
| Architectural Record | Classical Philology |
| Architectural Review (Boston) | Classical Quarterly |
| Architectural Review (London) | Classical Review |
| Architecture | Classical Weekly |
| Archives Italiennes de Biologie | Comptes rendus de l'Académie des Sciences |
| Art and Archaeology | Comptes rendus de la Société de Biologie |
| Astronomical Journal | Concrete and Constructional Engineering |
| Astrophysical Journal | Concrete Builder |
| Athenaeum | Concrete Highway Magazine |
| Atlantic Monthly | Concrete in Architecture and Engineering |
| Automotive Industries | Conservation |
| Bankers Magazine (American) | Construction |
| Bankers' Magazine (English) | Contemporary Review |
| Beama | Contract Record |
| Berichte der deutschen botanischen Gesellschaft | Contractor's Atlas |
| Berichte der deutschen chemischen Gesellschaft | Cumulative Book Index |
| Bibliographic Service | Current History |
| Bibliographischer Monatsbericht | Dalhousie Review |
| Bibliothèque Universelle | Deutsche Literaturzeitung |
| Biometrika | Dial |
| Blackwood's Edinburgh Magazine | Dickensian |
| Book List | Drama |
| Bookman (American) | Druggists' Circular |

- Economica
 Economic Geology
 Economist
 Educational Review
 Electrical Industries
 Electrical News
 Electrical Review (American)
 Electrical Review (English)
 Electrical World
 Electrician
 Electric Journal
 Electric Railway Journal
 Empire Mail
 Endocrinology
 Engineer, The
 Engineering
 Engineering and Contracting
 Engineering and Mining Journal
 Engineering News Record
 Engineering Review
 Englische Studien
 English Historical Review
 English Journal
 English Review
 Eugenics Review
 Euphorion
 Farmers' Telegram
 Financial Post of Canada
 Fortnightly Review
 Garden Cities and Town Planning
 Gas Journal
 Gazzetta Chimica Italiana
 General Electric Review
 Génie Civil
 Geographical Journal
 Geological Magazine
 Good Furniture
 Grinnell Company Bulletin
 Harper's Magazine
 Hibbert Journal
 Highway
 History
 Hoppe-Seyler's Zeitschrift
 House and Garden
 Hydro-Electric Power Commission of
 Ontario Bulletin
 Illustration
 Industrial Management
 Inter-America (English)
 Inter-America (Spanish)
 International Conciliation
 International Index to Periodicals
 International Journal of Ethics
 International Studio
 Iron Age
 Jahrbucher fur Wissenschaftliche Botanik
 Johns Hopkins University Circular
 Journal of Agricultural Research
 Journal of American Folk-lore
 Journal of The American Institute of
 Architects.
 Journal of The American Oriental Society
 Journal of The Biological Chemistry
 Journal of the Canadian Bankers' Asso-
 ciation
 Journal of the Chemical Society
 Journal of Comparative Legislation and
 International Law
 Journal des Economistes
 Journal of the Engineers' Club of St. Louis
 Journal of English and Germanic Philology
 Journal of Geology
 Journal of Hygiene
 Journal of Immunology
 Journal of Infectious Diseases
 Journal of the Institute of Actuaries
 Journal of the Institute of Bankers
 Journal of the Institution of Electrical
 Engineers
 Journal of the Iron and Steel Institute
 Journal de Mathématiques
 Journal of the National Educational Asso-
 ciation
 Journal of the New England Water Works
 Association
 Journal of Parasitology
 Journal of Pathology and Bacteriology
 Journal of Philosophy, Psychology and
 Scientific Methods
 Journal of Physical Chemistry
 Journal of Physiology
 Journal de Physiologie et de Pathologie
 Générale
 Journal de Physique et le Radium
 Journal of Political Economy
 Journal of Religion
 Journal of the Royal Asiatic Society
 Journal of the Royal Astronomical Society
 of Canada
 Journal of the Royal Microscopical Society
 Journal of the Society of Automotive
 Engineers
 Journal of Urology
 Journal of the Western Society of Engineers
 Justus Liebig's Annalen der Chemie
 Labour Gazette
 Lancet
 Lefax (Civil and Mining)
 Lefax (Electrical)
 Lefax (Mechanical)
 Literarisches Echo
 London Mercury
 Machinery
 Manitoba Free Press (Morning)
 Manitoba Gazette
 Manitoban
 Manitoba Veteran
 Mathematical Gazette
 Mechanical Engineering
 Medical Research Council: Special Report
 Series
 Memoirs of the Department of Agriculture
 in India—Bacteriological Series
 Memoirs of the Department of Agriculture
 in India—Botanical Series
 Memoirs of the Department of Agriculture
 in India—Chemical Series
 Memoirs of the Department of Agriculture
 in India—Entomological Series
 Messenger of Mathematics
 Miami Conservancy Bulletin
 Mind
 Mining and Scientific Press
 Modern Language Notes
 Modern Language Review
 Modern Philology
 Monatsregister
 Monthly Bulletin of Agricultural Statistics
 Monthly Notices of the Royal Astronomical
 Society
 Monthly Report of the Department of
 Trade, etc., of Canada
 Municipal Engineering
 Nation (English)
 Nation (New York)
 Nationaliste
 Natural History
 Nature
 N.E.A. Bulletin
 Neue Rundschau
 Neues Jahrbuch
 New Phytologist
 New Republic
 New Statesman

- New York Times Index
 Nineteenth Century and After
 North American Flora
 Notes and Queries
 Nuovo Cimento
 Observatory
 Ontario Library Review
 Palestine Exploration Fund: Quarterly Statement
 Pfluger's Archiv
 Pharmaceutical Journal
 Philosophical Magazine
 Philosophical Review
 Philosophical Transactions of the Royal Society of London (Series A)
 Philosophical Transactions of the Royal Society of London (Series B)
 Physical Review
 Physical Society of London: Proceedings
 Physikalische Zeitschrift
 Physiological Abstracts
 Poet Lore
 Poetry Review
 Political Science Quarterly
 Polytechnic Magazine
 Popular Astronomy
 Popular Mechanics
 Power
 Power Plant Engineering
 Proceedings of the Academy of Political Science
 Proceedings of the American Institute of Electrical Engineers
 Proceedings of the American Society of Heating and Ventilating Engineers
 Proceedings of the Institute of Radio-Engineers
 Proceedings of the Institution of Civil Engineers
 Proceedings of the London Mathematical Society
 Proceedings of the National Academy of Sciences of U.S.A.
 Proceedings of the Royal Society (Series A)
 Proceedings of the Royal Society (Series B)
 Proceedings of the Royal Society of Edinburgh
 Proceedings of the Zoological Society of London
 Professional Memoirs
 Publications of the Dominion Astrophysical Observatory
 Quarterly Journal of Economics
 Quarterly Journal of Experimental Physiology
 Quarterly Journal of the Geological Society
 Quarterly Journal of Mathematics
 Quarterly Journal of Microscopical Science
 Quarterly Journal of North Dakota
 Quarterly Journal of the Royal Meteorological Society
 Quarterly Journal of the University of North Dakota
 Quarterly Review
 Queen's Quarterly
 Railway Age
 Readers' Guide to Periodical Literature
 Religious Education
 Review of Applied Entomology (Series A)
 Review of Applied Entomology (Series B)
 Revue des Deux Mondes
 Revue Générale de l'Electricité
 Revue Historique
 Revue Mondiale
 Rhodora
 Romania
 Round Table
 School Life
 Science
 Science Abstracts—Sec. A—Physics
 Scientia
 Scientific American and Supplement
 Scientific American Monthly
 Scientific American Weekly
 Scientific Monthly
 Seasonable Hints: Eastern and B.C. Edition
 Seasonable Hints: Prairie Edition
 Smithsonian Miscellaneous Collections
 Spectator (London)
 Spectator (New York)
 Statist
 Statistical Bulletin, Metropolitan Life Insurance Co.
 Successful Methods
 Telephone Engineer
 Times (London), Educational Supplement
 Times (London), Engineering Supplement
 Times (London), Literary Supplement
 Times Weekly Edition
 Town Planning and Conservation of Life
 Transactions of the Actuarial Society of America
 Transactions of the American Society of Civil Engineers
 Transactions of the American Institute of Electrical Engineers
 Transactions of the American Mathematical Society
 Transactions of the Faraday Society
 Transactions of the Illuminating Engineering Society
 Transactions of the Royal Society of Canada
 United Empire
 United States Geological Survey: Department of the Interior: Bulletin, and Water Supply Papers
 University of Alberta: Press Bulletin
 University of Illinois Bulletin
 University of Illinois Studies in Language and Literature
 University of Illinois Studies in the Social Sciences
 University of Iowa: Studies
 University Monthly (New Brunswick)
 University Monthly (Toronto)
 University of the State of New York: Bulletin, New York State Library; Bibliographic Series
 University of Wisconsin Studies in Language and Literature
 Value World
 Vasari Society: Old Masters
 Veteran
 Vocational Summary
 West Trade World
 Weekly Bulletin: Department of Trade and Commerce, Canada
 Weekly Review
 Western Municipal News
 Winnipeg Community Builder
 Wochentliches Verzeichnis
 Yale Review
 Year Book of Wireless Telegraphy and Telephony
 Zeitschrift der deutschen Gesellschaft für Mechanik und Optik
 Zeitschrift für Botanik
 Zeitschrift für Instrumentenkunde
 Zeitschrift für Physikalische Chemie
 Zeitschrift für Kristallographie und Mineralogie
 Zeitschrift für Technische Physik

APPENDIX II.

STUDENT ORGANIZATIONS

UNIVERSITY OF MANITOBA STUDENTS' UNION.

Council

<i>Hon. President</i>	J. H. Evans
<i>President</i>	H. B. Chown (Medicine)
<i>Vice-President</i>	G. O. Watkins (Agriculture)
<i>Secretary</i>	H. E. Carey, B.A. (Law)
<i>Treasurer</i>	E. H. Brown (Pharmacy)
G. E. B. Sinclair (Engineers), G. Spry (Arts), E. S. Dixon (Wesley), A. E. O. Anderson (St. John's), F. R. Hughes (Science), E. Foreman, B.A. (Manitoba), A. G. Parent (St. Boniface) G. H. Dowker (Manitoban), A. J. Fleming (Athletics), C. Dick, B.A. (Debating), N. A. Young (Dramatics), (Accountancy),.....(Year Book).	

INTERCOLLEGIATE YOUNG MEN'S CHRISTIAN ASSOCIATION

In the Winnipeg Colleges and University are organized Young Men's Christian Associations. These Associations carry on the work in the colleges and are integral parts of the Intercollegiate Association, which directs the general policy and harmonizes the various activities of all. The policy of the organization is directed by an advisory board selected from the members of the faculties of the University and Colleges, and from the business men of the city. The different lines of work undertaken by the Association are: Bible and Mission study, the teaching of foreigners and prisoners in the provincial jail, the publishing of a handbook and the securing of rooms for students in the fall.

The following tentative basis of membership, as proposed for the recently suggested Christian Association of Canada, sets forth in a concise way the aims of this and other similar student associations.

"The Christian Student Association of Canada is a fellowship of students founded on the conviction that the life and teaching of Jesus are the supreme revelation of God and the surest guide to that relationship with Him which is Life abundant and eternal, and which will express itself in every human relationship.

The Association calls to its fellowship students who seek that relationship with God and who are willing through study, prayer or other means to test the validity of the conviction on which the Association is founded."

The following are the officers for 1921-22:

<i>President</i>	Henry Grant
<i>Vice-President</i>	W. M. Scott
<i>Secretary-Treasurer</i>	R. G. Horton
<i>Intercollegiate Secretary</i>	R. Schofield, M.A.
<i>Committee</i>	F. D. Saunderson, D. M. Black, R. B. Behrs.

Manitoban Staff, 1921-22

<i>Editor-in-Chief</i>	G. Hasted Dowker
<i>Advisory Editor-in-Chief</i>	Graham Spry
<i>Advisory Faculty Editor</i>	Professor H. W. Wright, Ph.D.
<i>Managing Editor</i>	
<i>Business Manager</i>	D. G. Elliott
<i>Advertising Manager</i>	
<i>Circulation Manager</i>	R. H. Longmore, B.A

**UNIVERSITY ARTS YOUNG MEN'S CHRISTIAN ASSOCIATION,
1920-1921**

<i>Honorary President</i>	Professor F. W. Clark, Ph.D.
<i>President</i>	F. D. Saunderson
<i>Vice-President</i>	S. M. Gilmour
<i>Secretary-Treasurer</i>	W. M. Scott

Chairman of Committees

<i>Bible and Mission Study</i>	Norman Young
<i>Social Service</i>	J. R. V. Deyell
<i>New Students</i>	A. L. Swanton
<i>Finance</i>	
<i>Programme</i>	

STUDENT COUNCIL

This Council meets to discuss matters of importance to students of University Arts.

<i>Senior Stick</i>	Graham Spry
<i>Lady Stick</i>	Miss M. M. Fares
<i>Secretary-Treasurer</i>	Miss D. M. Davey
<i>President of Fourth Year and Vice-Stick</i>	G. H. Dowker
<i>President Men's Athletics</i>	A. L. Williams
<i>President Women's Athletics</i>	Miss M. Jerrard
<i>President of Literary Society</i>	Miss E. B. Motley
<i>President of Debating Society</i>	G. H. Dowker
<i>Third Year Representative</i>	W. M. Scott
<i>Second Year Representative</i>	G. H. Bowes
<i>First Year Representative</i>	To be appointed
<i>Representative from Men's Self-Government Committee</i>	A. W. Johnson
<i>Representative from Women's Self-Government Committee</i>	To be appointed

MEN'S SELF-GOVERNMENT COMMITTEE

<i>Fourth Year</i>	A. W. Johnson (Chairman), G. H. Dowker, W. C. Murray, H. G. H. Smith
<i>Third Year</i>	C. W. Bradley, R. L. Dick, P. F. Winters
<i>Second Year</i>	T. E. Babb, G. H. Bowes
<i>First Year</i>	To be appointed

VOLUNTEER BAND

<i>President</i>	H. H. Saunderson
<i>Secretary-Treasurer</i>	Miss A. King
<i>Programme Committee</i>	H. K. Johnston, W. G. Rumball

ATHLETICS

<i>Honorary President</i>	Prof. D. L. Durkin, B.A.
<i>President</i>	A. L. Williams
<i>Vice-President</i>	A. W. Johnson
<i>Secretary-Treasurer</i>	G. H. Bowes

Under this general athletic executive clubs representing the various branches of sport have been organized with the following presidents:

<i>Track</i>	C. W. Brock
<i>Tennis</i>	A. W. Johnson
<i>Association Football</i>	W. C. Murray
<i>Rugby</i>	W. M. Scott
<i>Hockey</i>	D. H. Young
<i>Curling</i>	D. R. McLeod
<i>Basketball</i>	G. H. Bowes
<i>Bowling</i>	C. W. McQuillan
<i>Swimming</i>	F. M. Young

A well organized programme of inter-class competitions will be a feature of the coming session's activities in athletics.

LITERARY SOCIETY

<i>President</i>	Miss E. B. Motley
<i>Fourth Year Representatives</i>	Miss B. Hickson, W. C. Murray
<i>Third Year Representatives</i>	Miss V. Wright, R. C. Drew
<i>Second Year Representatives</i>	Miss Vera Gunn, G. M. Galt
<i>First Year Representatives</i>	To be appointed

The meetings of this society are one of the interesting features of University life and deserve to be attended by all. Its first meeting is in the form of a reception for all Freshmen and its last is a Community Night. Besides these there are four other interesting meetings held, two before and two after Christmas. All students are eligible to attend any of the meetings.

DEBATING SOCIETY

<i>President</i>	G. H. Dowker
<i>Fourth Year Representative</i>	Miss E. McNaught
<i>Third Year Representative</i>	C. G. Crosslands
<i>Second Year Representative</i>	Miss E. Topper
<i>First Year Representative</i>	To be appointed

Inter-class debates will be held during the term to decide which year shall receive the trophy. All would-be debaters are asked to hand in their names to their representative on the executive.

SCIENCE SOCIETY

<i>Honorary President</i>	Professor R. K. McClung, D.Sc.
<i>President</i>	F. R. Hughes
<i>Vice-President</i>	Miss C. Morgan
<i>Secretary</i>	D. Finn
<i>Treasurer</i>	To be appointed
<i>Representative on Manitoban</i>	George Brownell

<i>Convenor of Social Committee</i>	Margaret Turnbull
<i>Convenor of Debating Committee</i>	Peter Mar
<i>Convenor of Athletic Committee</i>	Alan Fleming
<i>Third Year Representative</i>	H. Hannesson
<i>Second Year Representative</i>	H. A. Watson
<i>First Year Representative</i>	To be appointed

STUDENT SCIENTIFIC SOCIETY

<i>Honorary President</i>	Professor J. W. Shipley, Ph.D.
<i>President</i>	W. S. Yarwood
<i>Vice President</i>	Miss Catherine Gibson
<i>Secretary</i>	Margaret Turnbull
<i>Treasurer</i>	J. M. Sigvaldson
<i>Refreshment Committee</i>	Miss Catherine Gibson

PHARMACY SOCIETY

<i>Honorary President</i>	Professor H. E. Bletcher, B.Sc. (Phar.).
<i>President</i>	W. J. Lamb
<i>Vice-President</i>	E. H. Brown
<i>Secretary</i>	Miss Marion Eck
<i>Treasurer</i>	W. Hunter

ARCHITECTURE SOCIETY

<i>Patrons</i>	F. W. Simons, J. H. G. Russell, J. D. Atchison
<i>Honorary President</i>	Professor A. A. Stoughton
<i>President</i>	Harold M. Heatley, B.Arch.
<i>Vice-President</i>	Harry Barratt
<i>Secretary-Treasurer</i>	E. R. Chaffey

DRAMATIC SOCIETY

<i>Honorary President</i>	Mrs. C. P. Walker
<i>President</i>	Norman Young
<i>Secretary</i>	Clifford Dick
<i>Treasurer</i>	William Barclay
<i>Business Manager</i>	D. G. Elliott

MENORAH SOCIETY

Officers for the year 1921-22:

Honorary Patrons:

President J. A. MacLean. Rev. H. J. Samuel. Professor H. W. Wright. A. M. Shinbane. M. Hyman.

<i>President</i>	J. D. Fieldman
<i>Vice-President</i>	M. M. Wintrobe, B.A.
<i>Rec. Secretary</i>	S. L. Booke
<i>Corr. Secretary</i>	Miss E. Ostry
<i>Treasurer</i>	R. Calof
<i>Executive Committee</i>	J. Halprin, LL.B., J. Kahana, B.A., J. H. Beckman.
<i>Teachers' Representative</i>	Miss B. Calof
<i>Menorah Educational Loan Fund</i>	E. A. Brotman, M.A., LL.B., N. C. Levin, B.A., LL.B.

Calculus - March & Wiff

"Locust-nest-tree" - Dick Bays

"Never Too Late to Mend" - Chas. Reed

Romeo and Juliet

Coriolanus

Opegius

In addition to the Calendar herein the following Calendars are issued by the University of Manitoba and may be obtained on request from the Registrar:

1. Matriculation.
2. Engineering and Architecture.
3. Medicine.
4. Law.
5. Agriculture and Home Economics.
6. General.

